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~~X~~ **SUGGESTED GUIDE**
FOR THE USE OF INSECTICIDES
TO CONTROL INSECTS AFFECTING CROPS,
LIVESTOCK, AND HOUSEHOLDS,
1965 ~~X~~

Agricultural Research Service • Entomology Research Division
and Federal Extension Service

U.S. DEPARTMENT OF AGRICULTURE

SUGGESTED GUIDE FOR THE USE OF INSECTICIDES TO CONTROL INSECTS AFFECTING CROPS, LIVESTOCK, AND HOUSEHOLDS—1965

FOREWORD

CONTENTS

This guide, prepared by the Entomology Research Division, Agricultural Research Service, as of January 1, 1965, suggests uses of chemicals for the control of insects and mites that affect crops, livestock, and households. The information was compiled by the various Branches of this Division in consultation with the Pesticides Regulation Division and the Federal Extension Service, and was reviewed by the Cooperative State Research Service and the Forest Service.

It is emphasized that these insecticide uses are those suggested by the Entomology Research Division. However, they are based on information obtained by various Federal, State, and other research organizations. They are intended as a guide for entomologists, other research and extension workers, and various agricultural associations and agencies, rather than to provide information for individual users. These suggested uses do not apply necessarily to all areas or parts of the country. There are other suggestions and other materials registered for use that will meet the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act and the provisions of Public Law 518, the Miller amendment to the Federal Food, Drug, and Cosmetic Act.

Tolerances for some insecticides have not yet been established by the Food and Drug Administration, and previously established tolerances are occasionally reconsidered and modified. As new tolerances are established or changes made, the Department will review its suggested uses and modify them as needed to insure that residues do not exceed the tolerances. Since new materials and new uses for older materials are registered throughout the year, we suggest that you keep in touch with your State Agricultural Experiment Station, State Extension Service, the Department of Agriculture, or manufacturers of specific products, for up-to-date information.

Many of the suggested uses in this Handbook appear in other publications of the Department. The important publications are listed. However, some of the uses have been modified and others are new and have not previously appeared in print. When the uses suggested in this Handbook differ from those in other publications of the Department, the grower or livestock producer should follow those in the Handbook.

E. F. Knipling, Director
Entomology Research Division

This publication supersedes Agriculture Handbook No. 120, Insecticide Recommendations of the Entomology Research Division for the Control of Insects Affecting Crops, Livestock, and Households for 1964.

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OTHER MEANS OF INSECT CONTROL

In addition to the use of insecticides there are a number of other ways to control or to help control insect pests. Natural control factors, such as insect parasites, predators, and diseases, and adverse weather conditions, are continually at work in the field, and in many instances, they reduce and keep pest populations at non-economic levels. Good sanitation and housekeeping practices are essential for effective control of the house fly, stable fly, cockroaches, fleas, and similar pests, even when supplemented by the use of chemicals. Cultural and mechanical practices aid materially in the control of certain crop pests, including the pink bollworm, boll weevil, and tobacco hornworm. Crop varieties resistant to insect pests have been developed and are available to avoid or reduce damage by such insects as the Hessian fly, wheat stem sawfly, spotted alfalfa aphid, and European corn borer. More satisfactory control of insect pests may frequently be obtained by carefully integrating the use of insecticides with the beneficial effects of biological control agents. It may be necessary to use insecticides only as a supplement to other control methods.

In the case of any insect infestation consider all means of control in order to capitalize on the value of all control factors and coordinate these factors to the greatest advantage, with the least harmful effect to the environment and to living organisms within it. Various State and Federal publications suggest this approach to pest control. Consult these publications and your State agricultural experiment station for the latest information. Do not use insecticides unless they are needed.

EFFECT OF WEATHER AND PLANT AND ANIMAL CONDITIONS ON TREATMENT WITH INSECTICIDES

It is difficult to provide specific information on the application of insecticides in relation to weather conditions prevailing at the time of treatment. Only generalities are given here since much depends on the habits of the insect pest, the kind of damage that it causes, the nature and stage of maturity of the infested plants, the particular insecticide and formulation used, and the type of application equipment. For more exact information to meet special needs, consult your State agricultural experiment station.

Wind, rain, and sun play an important part in the control you get from insecticides. Keep an eye on the weather. Local weather reports may be of help in planning insecticide applications. Before you start to treat,

watch the tops of trees or use other means of determining the direction and amount of wind. Generally speaking, avoid application of insecticides when the wind is blowing faster than 8 miles an hour. Some air movement is helpful. High and shifting winds, however, can cause an insecticide dust or spray to be unevenly distributed on the plants and to drift away from target areas. Usually the best time for airplane spraying is in the early morning or late evening. Treating at these times minimizes the harm to bees and other pollinating insects.

If the weather man predicts rain, it is best to postpone treatment, if possible. Rain falling soon after you treat may reduce the effectiveness of an insecticide deposit. Cold weather may have the same effect. Some insecticides must be applied at temperatures above 55° F. to be of value.

The type and density of plant foliage, as well as the extent of coverage needed, may influence the choice of formulation that is applied. In some instances a coarse spray will be the most effective; in others, a fine spray, mist, or fog will give better pest control. Plants with smooth leaves are apt to have a quicker "run off" of spray material than those with rough surfaces. However, stickers that are included in the formulation, or which may be added, help the material adhere to the plants.

Sick, emaciated, or stressed animals may react unfavorably to some treatment materials. Thick hair on livestock may keep the insecticide from penetrating. Consider all such circumstances in selecting an insecticide, type of formulation, or type of equipment that will provide the best and safest control of the target pest.

CALIBRATION OF EQUIPMENT FOR APPLYING INSECTICIDES TO CROPS¹

At the start of each growing season, thoroughly inspect and calibrate all equipment you will use to apply insecticides to crops. Repeat thereafter whenever you use a different rate of application. It is most essential that you apply the correct dosage, not only to obtain effective control of the insect pest but also to be certain that any residue remaining at the time of harvest or feeding does not exceed the tolerance established for the particular chemical on the crop you treat.

¹ Information furnished by the Agricultural Engineering Research Division, Agricultural Research Service, U.S. Department of Agriculture.

Power Sprayers

Before you start to spray a field, check or calibrate the sprayer to determine whether it will deliver at the desired rate. *Note:* Since viscosity of spray material can affect the discharge rate, it is preferable to calibrate the sprayer with the mixture you plan to use. It is also preferable to make your calibration in an area as similar as possible to the one you plan to treat.

One method of calibrating a sprayer is as follows: (1) Set two stakes in the ground 40 rods apart (660 feet). (2) With the sprayer on level ground, fill the tank with the liquid. Then operate the sprayer long enough so that all nozzles are discharging smoothly. Cut off sprayer and refill tank. Then mark the height of the spray material on a measuring stick that you have calibrated in gallons for your particular tank. (3) Drive the spray rig one round trip between stakes at the speed and pressure suggested by the nozzle manufacturer, with the sprayer in full operation. *Spray only between the stakes.* (4) With the sprayer again on level ground, place the measuring stick in the tank and determine the gallons of spray used for the round trip. (5) Multiply the number of gallons used by 33 and divide by the number of feet in the width sprayed. The result of this calculation will be the number of gallons required per acre.

Example—Suppose the boom on your sprayer is 20 feet long, and it took 5 gallons of spray material to refill the tank after spraying the round trip during the calibration. Five times 33 divided by 20 equals 8.2 gallons per acre.

If the calibration shows that the application rate is too low, increase the rate by reducing the speed of travel or increasing the pressure. You may decrease the rate by doing the opposite in each case.

Power Dusters

Before starting a dusting operation, check the application rate of the duster unit. Dust mixtures vary in density, and the application rate can vary at a given setting of the feed regulator.

A procedure that can be used to calibrate a duster is as follows:

(1) Measure off an area of at least $\frac{1}{2}$ -acre (21,780 square feet). (2) Fill the dust hopper and set the feed regulator for the desired application rate. (3) Dust the measured area. Drive at a constant rate of speed, because rate of speed affects the application rate. Use of a tractor speedometer is

recommended. (4) Refill the hopper from a weighed amount of dust. Subtract the weight of the dust left over from the weight of the original amount. This gives the amount required to fill the hopper and, therefore, the amount applied to the measured $\frac{1}{2}$ -acre.

Applicators for Granules

Many equipment manufacturers and some producers of granular insecticides can provide tables showing the proper settings of the feed mechanism for selected flow rates of specific materials. However, it is usually necessary to calibrate the applicator for each new batch used because of the allowable range of sizes in a formulation and because of differences in density.

You may find it convenient to affix paper bags at the dispersing points of the applicator, run a measured course at a measured speed, and then weigh the granules collected. Calculations can then be made to show how many pounds of granules are being dispersed per acre.

Or you may calibrate your applicator in the field. Set the applicator to distribute less than the manufacturer recommends. Then measure out 1 pound of granules at a time and mark the level in 1-pound increments on the inside of each hopper. The marks tell you how fast the granules feed down, and the applicator can then be gradually opened up to get the rate desired.

Aircraft Equipment

For information on aircraft calibration, consult U.S. Department of Agriculture Farmers' Bulletin No. 2062, *How to Spray the Aircraft Way*.

GENERAL PRECAUTIONS FOR SAFE USE OF INSECTICIDES

The following safeguards are for the protection of the ultimate consumer of food crops and animal products, and of honey bees, other pollinating insects, fish, and wildlife, as well as of handlers of insecticides and treated plants.

Insecticides are poisonous to man and animals. Use them only when needed and handle them with care. Follow the directions and heed all precautions on the container label. Insecticides should be kept in closed, well-labeled containers, in a dry place where they will not contaminate food or feed, and where children and animals cannot reach them.

Protection of Persons Using Insecticides

In handling any insecticide, avoid repeated or prolonged contact with skin and prolonged inhalation of dusts and mists. Wear clean, dry clothing, and wash hands and face before eating or smoking.

The handling and application of most concentrates and the handling and application of oil solutions applied as coarse sprays require special precautions. When handling or mixing concentrates of any insecticide, avoid spilling them on the skin and keep them out of the eyes, nose, and mouth. If any is spilled, wash it off the skin and change clothing immediately. If it gets in the eyes, flush with plenty of water for 15 minutes and get medical attention.

The following insecticides can be used safely without special protective clothing or devices, provided they are in dilute dusts, dilute water sprays, low volume and dilute oil mist sprays, granules or baits. Concentrates of these insecticides should be handled in accordance with the precautions for such materials as described above.

Aramite	mirex
calcium arsenate	Morestan
carbaryl	ovex
chlorbenside	paradichlorobenzene
chlorobenzilate	paris green
cryolite	Perthane
DDT	pyrethrins
Dilan	pyrethrum
fenson	ronnel
Genite 923	rotenone
Kelthane	ryania
Kepone	Strobane
lead arsenate	sulfur
Lethane 384	Sulphenone
lime sulfur	TDE
malathion	tetradifon
metaldehyde	trichlorfon
methoxychlor	Thanite

The following insecticides can be absorbed directly through the skin in harmful quantities. When working with these insecticides in any form, take the same precautions as with concentrates.

aldrin	DN-111
benzene hexachloride	dioxathion
binapaeryl	endosulfan
chlordan	ethion
Ciodrin	ethylene dichloride
coumaphos	fenthion
diazinon	heptachlor
dichlorvos	lindane
dieldrin	naled
dimethoate	Nemacide (V-C 13)
dinitrobutylphenol	Ruelene
dinotroresol	toxaphene
dinitrocyclohexylphenol	Zectran

The following insecticides are extremely poisonous and may be fatal if swallowed, inhaled, or absorbed through the skin. These highly toxic insecticides should be applied only by a person thoroughly familiar with their hazards and who will assume full responsibility for safe use and comply with all the precautions on the labels.

Bidrin	methyl parathion
carbophenothion	Methyl Trithion
D-D	mevinphos
demeton	nicotine sulfate
Di-Syston	parathion
endrin	phorate
EPN	phosphamidon
Guthion	Shell Compound 4072
methyl bromide	Telone
	tepp

Reduce the danger of skin exposure by wearing protective clothing and equipment as specified on the container label. If called for, wear a respirator or mask of a type that has been tested by the U.S. Department of Agriculture and found to be satisfactory for protection against the particular insecticide being used. Full-face masks are needed under certain conditions. They should always be worn by persons applying insecticides as aerosols in greenhouses and often by persons loading insecticides into aircraft or applying them by aircraft. A current list of acceptable respira-

tory protective devices may be obtained from the Entomology Research Division, Agricultural Research Service, Beltsville, Md.

The gas methyl chloride, used as a propellant in greenhouse aerosols, and the liquid carbon disulfide are both flammable and explosive. Never use them near heat or fire in any form, or open containers where there is little air in circulation without wearing an adequate full-face mask. Do not transfer ethylene dibromide from one container to another in a closed room; do not breathe the fumes.

Protection of Persons Handling Treated Plants

If you must transplant or otherwise handle plants within 5 days after treatment with endrin, demeton, Di-Syston, Guthion, or parathion, or within 1 day after treatment with methyl parathion or mevinphos, protect your skin by wearing clean, dry cotton gloves. If gloves become wet, replace them with clean dry ones. If you must work in close contact with treated crops, as in thinning or harvesting, you should also wear clean, tightly woven clothing.

Treatment for Poisoning

If an insecticide is swallowed, induce vomiting by giving 1 tablespoonful of salt in a glass of warm water; repeat until vomit fluid is clear or the odor of solvent is gone. Have the victim lie down and keep quiet. Call a physician immediately. If a concentrate or oil solution is spilled on the skin, remove contaminated clothing, and wash skin with soap and water. If a person suddenly feels sick while using an insecticide or shortly afterwards, a physician should be called immediately. In all cases make available the pesticide container and any attached labeling. Information provided by them is invaluable to the physician.

In many cities there is a Poison Control Center that will have available information concerning symptoms and treatment of cases of actual or suspected poisoning by pesticides; consult your local telephone directory. If you cannot obtain this information locally, call the U.S. Public Health Service at Atlanta, Ga., or Wenatchee, Wash.

Protection of Fish and Wildlife

To protect fish and wildlife, be careful not to contaminate streams, lakes, or ponds with insecticides. Avoid drift of materials to such water sources. Where drift may create a problem, sprays are preferred to dusts and ground

applications to air applications. Do not clean spraying equipment or dump excess spray material near streams or ponds.

Protection of Insect Parasites and Predators

A grower's program of crop pest control should be designed to take maximum advantage of any biological control factors that may be present. Whenever possible, the insecticide should be selective against the pest species concerned, and of minimum danger to beneficial insects. If parasites or predators are abundant, it may be advantageous to defer or omit insecticide treatments.

Protection of Honey Bees and Other Insect Pollinators

Many insecticides are hazardous to honey bees and to other pollinating insects. Damage to bees can be minimized by taking the following precautions:

- Use a material least toxic to bees that will control the insect pest.
- If a highly toxic material must be used, apply it during hours when the bees are not visiting the plants. Treatment during the night or early morning is the safest.
- Use sprays instead of dusts. They are usually less hazardous. Application with ground equipment is less hazardous to bees than airplane application.
- Avoid drift of insecticide into bee yards and adjacent crop or wild plants in bloom.
- Use the lowest effective dosage and make a minimum number of applications.
- Notify beekeepers at least 48 hours before dusting or spraying large acreages so that measures can be taken to protect the bees.

The following groupings indicate the relative toxicities of many of the insecticides to honey bees as determined by laboratory and field tests.¹ For further information applicable to local conditions, consult your State agricultural experiment station.

¹ OSA #170 Rev. (1964) Toxicity of Pesticides to Honeybees. University of California Agricultural Extension Service and United States Department of Agriculture cooperating.

Highly toxic: These materials will cause severe losses if used when bees are present at time of treatment or within a few days afterwards:

aldrin	Guthion
benzene hexachloride	heptachlor
Bidrin	lead arsenate
calcium arsenate	lindane
carbaryl	malathion
chlordane	methyl parathion
Ciodrin	Methyl Trithion
diazinon	mevinphos
dichlorvos	naled
dieldrin	parathion
dimethoate	phosphamidon
EPN	tepp
fenthion	Zectran

Moderately toxic: These materials can be used with ordinary precautions but should not be applied directly on bees in the field or on the colonies:

carbophenothion	endrin
chlorobenzilate	fenson
coumaphos	mirex
DDT	Perthane
Di-Syston	phorate
endosulfan	ronnel
	TDE

Relatively nontoxic: These materials can be used with a minimum of injury to the bees:

Aramite	Morestan
binapacryl	nicotine sulfate
chlorbenside	ovex
cryolite	pyrethrins
demeton	rotenone
Dilan	ryania
dioxathion	Strobane
ethion	sulfur
Genite 923	tetradifon
Kelthane	toxaphene
methoxychlor	trichlorfon

Avoiding Harmful Residues on or in Food and Feed

Residues in excess of the established tolerances can be avoided by applying only those insecticides specified for use on the crop or livestock and by following indicated schedules. Do not exceed recommended dosages. Observe carefully the safety restrictions, especially the required interval between the last application and harvest or feeding and between the last application and slaughter of animals.

Avoid drift of insecticide sprays or dusts to nearby crops or livestock, especially from applications by airplane and other power equipment. Do not allow poultry, dairy animals, or meat animals to feed on plants or drink water contaminated by drift of insecticides.

Byproducts from a number of crops treated with insecticides may be safely fed to livestock or poultry if the crops are harvested or fed after the specified waiting period. However, byproducts from some crops treated with certain insecticides may contain insecticide residues that will appear in meat, milk, or eggs in excess of established tolerances when fed to livestock. Before use, it should be determined if such byproducts as sweet corn or other ensilage, bagasse, alfalfa threshings, apple pomace, bean and pea vines, sugar beet pulp and tops, cull potatoes, trimmings from leafy vegetables, and cottonseed meal and hulls are safe for feeding to dairy animals, poultry, or animals being finished for slaughter.

Safe Disposal of Empty Insecticide Containers and Surplus Insecticides

The careful disposal of empty insecticide containers and surplus insecticides is an important part of safe insecticide use. When possible, growers should carry their empty insecticide containers to a sanitary land-fill type dump. If a suitable dump is not available, burn empty insecticide bags and cardboard containers in the open and bury the ashes in an isolated place where they will not contaminate water supplies. *Keep out of the smoke.* Break or crush glass and metal containers and bury in an isolated place where they will not contaminate water supplies. Pour excess insecticides into a hole dug in level ground in an isolated place where they will not contaminate water supplies, and cover with dirt to a depth of at least 18 inches. Home gardeners should wrap empty insecticide containers in heavy layers of newspapers before placing them in trash cans. For more specific information on the safe disposal of empty insecticide containers and surplus insecticides consult U.S. Department of Agriculture publications on the subject or your State agricultural experiment station.

TOXICITY OF INSECTICIDES

The following two tables provide information on the toxicity of various insecticides. In the first table, acute oral and dermal LD₅₀ values are given for most of the compounds included in this Handbook. The LD₅₀ values are statistical estimates of the dosage necessary to kill 50% of a population of white rats or other small test animals within a specified period under standardized conditions in the laboratory. The toxicity of the chemicals to such animals may vary, however, with species, age, sex, and nutritional state, and with the formulation of the insecticide and route of administration. The LD₅₀ values are also usually expressed in terms of a single dosage and, therefore, provide little or no information on possible cumulative effects of a compound. In the second table are given the acute LC₅₀ values of certain insecticides for two fresh water fishes, rainbow trout and bluegills. The LC₅₀ values are statistical estimates of the concentration necessary to kill 50% of the fish population within a specified period under standardized laboratory conditions. Such values are not yet available for all of the insecticides mentioned in the Handbook and for suitable representatives of the many different species of both fresh and salt water fishes.

LD₅₀ values are useful in making comparisons of different chemical compounds. However, they have certain limitations and caution must be used in their interpretation in relation to actual use hazards. Since the values are obtained for animals, they can be applied only with reservations to man.

The hazard of any compound may depend more on the way in which it is used than on its toxicity. Under comparable conditions and dosage rates, highly toxic substances present a greater hazard than less toxic materials. However, such factors as inherent toxicity, dosage rate, frequency of application, and persistence must be considered. For example, a highly toxic material applied in a low concentration or at a low dosage may be less hazardous than a much less toxic one used in a high concentration or at a high dosage.

ACUTE ORAL AND DERMAL LD₅₀ VALUES OF INSECTICIDES FOR WHITE RATS AND OTHER TEST ANIMALS AS INDICATED

(Data assembled by the Toxicology Section, Public Health Service, U.S. Department of Health, Education, and Welfare. Values are based on publications from several laboratories.)

Insecticide	Oral LD ₅₀ (mg/kg)*		Dermal LD ₅₀ (mg/kg)*	
	Males	Females	Males	Females
<i>Chlorinated Hydrocarbon Insecticides</i>				
aldrin	39	60	98	98
benzene hexachloride	1250 ^a	—	—	—
chlordane	335	430	840	690
chlorobenzilate	1040	1220	—	> 5000
D-D	140 ^a	—	2100 ^{a,b}	—
DDT	113	118	—	2510
dieldrin	46	46	90	60
Dilan	600	475	6900	5900
endosulfan	43	18	130	74
endrin	17.8	7.5	18	15
ethylene dibromide	146	117	300 ^{a,b,c}	—
ethylene dichloride	770 ^a	—	3890 ^{a,b}	—
heptachlor	100	162	195	250
Kelthane	1100	1000	1230	1000
lindane	88	91	1000	900
methoxychlor	5000	5000	—	> 6000
mirex	740	600	> 2000	> 2000
paradichlorobenzene	> 1000	> 1000	—	—
Perthane	> 4000	> 4000	—	—
Strobane	200 ^a	—	> 5000 ^{a,b}	—
TDE	> 4000	> 4000	> 4000 ^{a,b}	—
Telone	250-500 ^a	—	—	—
toxaphene	90	80	1075	780

ACUTE ORAL AND DERMAL LD₅₀ VALUES OF INSECTICIDES FOR WHITE RATS AND OTHER TEST ANIMALS AS INDICATED—Cont.

Insecticide	Oral LD ₅₀ (mg/kg)*		Dermal LD ₅₀ (mg/kg)*	
	Males	Females	Males	Females
<i>Organic Phosphate Insecticides</i>				
Bidrin	22 ^a	—	225 ^{a,b}	—
carbophenothion	30	10	54	27
Ciodrin	125 ^a	—	385 ^{a,b}	—
coumaphos	41	15.5	860	—
demeton	6.2	2.5	14	8.2
diazinon	108	76	900	455
dichlorvos	80	56	107	75
dimethoate	215	—	400	610
dioxathion	43	23	235	63
Di-Syston	6.8	2.3	15	6
EPN	36	7.7	230	25
ethion	65	27	245	62
fenthion	215	245	330	330
Guthion	13	11	220	220
malathion	1375	1000	>4444	>4444
methyl parathion	14	24	67	67
Methyl Trithion	98	120	215	190
mevinphos	6.1	3.7	4.7	4.2
naled	250	—	800	—
Nemacide (V-C 13)	270	—	—	—
parathion	13	3.6	21	6.8
phorate	2.3	1.1	6.2	2.5
phosphamidon	23.5	23.5	143	107
ronnel	1250	2630	—	>5000
Ruelene	635	460	—	—
Shell Compound 4072	14.5	13	31	30
tepp	1.05	—	2.4	—
trichlorfon	630	560	>2000	>2000

Insecticide	Oral LD ₅₀ (mg/kg)*		Dermal LD ₅₀ (mg/kg)*	
	Males	Females	Males	Females
<i>Carbamate Insecticides</i>				
carbaryl	850	500	>4000	>4000
Zectran	37	25	1500–2500 ^d	1500–2500 ^d
<i>Other Insecticides</i>				
Insecticide	Oral LD ₅₀ (mg/kg)*		Dermal LD ₅₀ (mg/kg)*	
	Males	Females	Males	Females
Aramite	3900	3900	—	—
calcium arsenate	—	298	—	>2400
chlorbenside	>10,000 ^a	—	—	—
cryolite	200 ^a	—	—	—
dinitrobutylphenol	40	40	150–200 ^{a,e}	—
dinitrocresol	31	31	300–400 ^{a,e}	—
dinitrocyclohexylphenol	60	60	>1000 ^{a,e}	—
fenson	1350–1740 ^a	—	—	—
Genite 923	500 ^a	—	—	—
lead arsenate	—	1050	—	>2400
Lethane 384	90	—	250–500 ^{a,b}	—
metaldehyde	ca. 1000 ^{a,f}	—	—	—
Morestan	1800	1100	>2000	>2000
nicotine sulfate	—	83	—	285
ovex	2050 ^a	—	—	—
paris green	—	100	—	>2400
pyrethrins	>1500 ^a	—	>1880 ^{a,b}	—
pyrethrum	1870	820	2060 ^{a,b}	—
rotenone	50–75 ^a	—	>940 ^{a,b}	—
ryania	1200 ^a	—	>4000 ^{a,b}	—
Sulphenone	1400–3650 ^a	—	—	—
tetradifon	>14,700 ^a	—	>10,000 ^{a,b}	—
Thanite	1600 ^a	—	6000 ^{a,b}	—

^a Sex not indicated.

^b Value for rabbits.

^c Approximate LD₅₀.

^d Estimated LD₅₀.

^e Value for guinea pigs.

^f Value for dogs.

* Dosage killing 50% of population within a specified period.

AVERAGE ACUTE 24-HOUR LC₅₀ VALUES OF CERTAIN INSECTICIDES FOR RAINBOW TROUT AND BLUEGILLS

(Data provided by Fish-Pesticide Research Laboratory, Bureau of Sport Fisheries and Wildlife, Department of Interior. Values are based on amount of active ingredient and were determined by the Laboratory under standardized conditions, testing rainbow trout 43–58 mm in length at 55° F., and bluegills 45–58 mm in length at 75° F.)

Insecticide	LC ₅₀ for rainbow trout, in micrograms per liter*	LC ₅₀ for bluegills, in micrograms per liter*
aldrin	14	10
Aramite	730	480
carbaryl	3500	3400
chlordane	22	54
DDT	8	7
demeton	—	195
diazinon	380	54
dichlorvos	500	1000
dieldrin	6	14
dimethoate	20,000	28,000
endrin	0.7	0.8
fenthion	840	1800
heptachlor	15	35
Kelthane	110	—
lindane	30	61
malathion	100	120
methoxychlor	20	31
methyl parathion	—	8500
naled	70	220
ovex	860	870
parathion	2000	56
Perthane	9	21
phosphamidon	4500	—
pyrethrins	56	78
rotenone	32	24

AVERAGE ACUTE 24-HOUR LC₅₀ VALUES OF CERTAIN INSECTICIDES FOR RAINBOW TROUT AND BLUEGILLS—Cont.

Insecticide	LC ₅₀ for rainbow trout, in micrograms per liter*	LC ₅₀ for bluegills, in micrograms per liter*
Strobane	12	15
TDE	30	56
toxaphene	7.6	7.2
trichlorfon	28,000	5600
Zectran	6500	16,000

* Concentration killing 50% of population in 24-hour period; 1 microgram per liter is equivalent to .001 part per million or 1 part per billion.

CHEMICALS REFERRED TO IN THIS HANDBOOK

<u>Name Used</u> ¹	<u>Chemical Name</u>
aldrin	not less than 95% of 1,2,3,4,10,-10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-endo-exo-5,8-dimethanonaphthalene
Aramite®	2-(<i>p</i> -tert-butylphenoxy)isopropyl 2-chloroethyl sulfite
benzene hexachloride	1,2,3,4,5,6-hexachlorocyclohexane, consisting of several isomers and containing a specified percentage of <i>gamma</i> isomer
Bidrin®	3-hydroxy- <i>N,N</i> -dimethyl- <i>cis</i> -crotonamide dimethyl phosphate
calcium arsenate	calcium arsenate
binapacryl	2- <i>sec</i> -butyl-4,6-dinitrophenyl 3-methyl-2-butenolate
carbaryl	1-naphthyl methylcarbamate
carbon disulfide	carbon disulfide
carbophenothion	<i>S</i> -[(<i>p</i> -chlorophenylthio)methyl] <i>O,O</i> -diethyl phosphorodithioate
chlorbenside	<i>p</i> -chlorobenzyl <i>p</i> -chlorophenyl sulfide

<u>Name Used</u> ¹	<u>Chemical Name</u>
chlordanes	at least 60% of 1,2,4,5,6,7,8,- 8-octachloro-2,3,3a,4,7,7a-hexa- hydro-4,7-methanoindene and not over 40% of related compounds
chlorobenzilate	ethyl 4,4'-dichlorobenzilate
Ciodrin®	<i>alpha</i> -methylbenzyl 3-hydroxy- crotonate dimethyl phosphate
coumaphos	<i>O,O</i> -diethyl <i>O</i> -(3-chloro-4-methyl- 2-oxo-2 <i>H</i> -1-benzopyran-7-yl) phosphorothioate
cryolite	sodium hexafluoro aluminate
D-D®	dichloropropane-dichloropropene mixture
DDT	1,1,1-trichloro-2,2-bis(<i>p</i> - chlorophenyl)ethane
demeton	mixture of <i>O,O</i> -diethyl <i>S</i> (and <i>O</i>)-2-(ethylthio)ethyl phos- phorothioates
diazinon	<i>O,O</i> -diethyl <i>O</i> -(2-isopropyl-4- methyl-6-pyrimidinyl) phos- phorothioate
dichlorvos	2,2-dichlorovinyl dimethyl phosphate
dieldrin	not less than 85% of 1,2,3,4,10,- 10-hexachloro-6,7-epoxy-1,4,4a,- 5,6,7,8,8a-octahydro-1,4- <i>endo-exo</i> - 5,8-dimethanonaphthalene
Dilan®	a mixture of 1 part of 1,1-bis(<i>p</i> - chlorophenyl)-2-nitropropane (Prolan®) and 2 parts of 1,1- bis(<i>p</i> -chlorophenyl)-2-nitrobutane (Bulan®)
dimethoate	<i>O,O</i> -dimethyl <i>S</i> -(<i>N</i> -methylcarbami- dylmethyl) phosphorodithioate
dinitrobutylphenol	2- <i>sec</i> -butyl-4,6-dinitrophenol
dinitrocresol	4,6-dinitro- <i>o</i> -cresol
dinitrocyclohexylphenol	2-cyclohexyl-4,6-dinitrophenol
dioxathion	<i>p</i> -dioxane-2,3-diyl ethyl phosphorodithioate
diphenylamine	diphenylamine

<u>Name Used</u> ¹	<u>Chemical Name</u>
Di-Syston®	<i>O,O</i> -diethyl <i>S</i> -[2-(ethylthio)ethyl] phosphorodithioate
endosulfan	6,7,8,9,10,10-hexachloro-1,5,5a,- 6,9,9a-hexahydro-6,9-methano- 2,4,3-benzodioxathiepin 3-oxide
endrin	1,2,3,4,10,10-hexachloro-6,7- epoxy-1,4,4a,5,6,7,8,8a-octa- hydro-1,4- <i>endo-endo</i> -5,8- dimethanonaphthalene
EPN	<i>O</i> -ethyl <i>O-p</i> -nitrophenyl phenylphosphonothioate
ethion	<i>O,O,O',O'</i> -tetraethyl <i>S,S</i> -methylenebisphosphorodi- thioate
ethylene dibromide	1,2-dibromoethane
ethylene dichloride	1,2-dichloroethane
fenson	<i>p</i> -chlorophenyl benzenesulfonate
fenthion	<i>O,O</i> -dimethyl <i>O</i> -[4-(methylthio)- <i>m</i> -tolyl] phosphorothioate
Genite 923®	2,4-dichlorophenyl benzenesulfonate
Guthion®	<i>O,O</i> -dimethyl <i>S</i> -(4-oxo-1,2,3- benzotriazin-3(4 <i>H</i>)-ylmethyl) phosphorodithioate
heptachlor	1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-tetrahydro-4,7- methanoindene
Kelthane®	1,1-bis(<i>p</i> -chlorophenyl)-2,2,2- trichloroethanol
Kepone®	decachloroöctahydro-1,3,4- methano-2 <i>H</i> -cyclobuta[<i>cd</i>]- pentalen-2-one
lead arsenate	acid lead arsenate
Lethane 384®	2-(2-butoxyethoxy)ethyl thio- cyanate
lime sulfur	30% calcium polysulfide and various small amounts of calcium thiosulfate plus water and free sulfur
lindane	1,2,3,4,5,6-hexachlorocyclo- hexane, <i>gamma</i> isomer of not less than 99% purity

<u>Name Used</u> ¹	<u>Chemical Name</u>
malathion	<i>S</i> -[1,2-bis(ethoxycarbonyl)ethyl] <i>O,O</i> -dimethyl phosphorodithioate
metaldehyde	acetaldehyde polymer
methoxychlor	1,1,1-trichloro-2,2-bis(<i>p</i> - methoxyphenyl)ethane
methyl bromide	bromomethane
methyl chloride	chloromethane
methyl parathion	<i>O,O</i> -dimethyl <i>O-p</i> -nitrophenyl phosphorothioate
Methyl Trithion®	<i>S</i> -(<i>p</i> -chlorophenylthio)methyl <i>O,O</i> -dimethyl phosphorodithioate
mevinphos	methyl 3-hydroxy- <i>alpha</i> -crotonate dimethyl phosphate
mirex	dodecachlorooctahydro-1,3,4- metheno-2 <i>H</i> -cyclobuta[<i>cd</i>]- pentalene
Morestan®	6-methyl-2,3-quinoxalinedithiol cyclic <i>S,S</i> -dithiocarbonate
naled	1,2-dibromo-2,2-dichloroethyl dimethyl phosphate
Nemacide® (V-C 13)	<i>O</i> -2,4-dichlorophenyl <i>O,O</i> -diethyl phosphorothioate
nicotine sulfate	nicotine sulfate
ovex	<i>p</i> -chlorophenyl <i>p</i> -chlorobenzene- sulfonate
paradichlorobenzene	<i>p</i> -dichlorobenzene
parathion	<i>O,O</i> -diethyl <i>O-p</i> -nitrophenyl phosphorothioate
paris green	copper acetoarsenite
Perthane®	a mixture of 1,1-dichloro-2,2- bis(<i>p</i> -ethylphenyl)ethane (95%) and related reaction products (5%)
phorate	<i>O,O</i> -diethyl <i>S</i> -(ethylthio)methyl- phosphorodithioate
phosphamidon	2-chloro-2-diethylcarbamoyl-1- methylvinyl dimethyl phosphate
pyrethrins	the active insecticidal constituents of pyrethrum
pyrethrum	dried flowers of <i>Chrysanthemum</i> <i>cinerariaefolium</i>

<u>Name Used</u> ¹	<u>Chemical Name</u>
ronnel	<i>O,O</i> -dimethyl <i>O</i> -2,4,5-trichloro- phenyl phosphorothioate
rotenone	the primary active compound of derris and cube roots
Ruelene®	4- <i>tert</i> -butyl-2-chlorophenyl methyl methylphosphoramidate
ryania	powdered stemwood of <i>Ryania</i> <i>speciosa</i>
Shell Compound 4072	2-chloro-1-(2,4-dichlorophenyl)- vinyl diethyl phosphate
Strobane®	terpene polychlorinates (65% chlorine)
sulfur	sulfur
Sulphenone®	<i>p</i> -chlorophenyl phenyl sulfone
TDE	1,1-dichloro-2,2-bis(<i>p</i> -chloro- phenyl)ethane
Telone®	mixed dichloropropenes
tepp	ethyl pyrophosphate
tetradifon	4-chlorophenyl 2,4,5-trichloro- phenyl sulfone
Thanite®	a mixture of isobornyl thio- cyanoacetate (82%) and related compounds
toxaphene	chlorinated camphene containing 67–69% chlorine
trichlorfon	dimethyl (2,2,2-trichloro-1- hydroxyethyl)phosphonate
Zectran®	4-dimethylamino-3,5-xylyl methylcarbamate

¹ Common names apply to all insecticides except those with designation which indicates a registered trademark.

PUBLICATIONS CONCERNED WITH SAFE USE OF INSECTICIDES

For further information on the safe use of insecticides mentioned in this Handbook, consult the following U.S. Department of Agriculture publications:

Farmers' Checklist for Pesticide Safety (Program Aid No. 622)

Safe Use of Pesticides in the Home-in the Garden (Program Aid No. 589)

Apply Pesticides Safely by Aircraft

Safe Disposal of Empty Pesticide Containers and Surplus Pesticides

Behind the Pesticide Label (Picture Story No. 168)

Respiratory Devices for Protection Against Certain Insecticides
(ARS-33-76-1)

EXPLANATION OF TABLES THAT FOLLOW

"Formulation" refers to the form or concentration of the insecticide, usually as purchased. Dusts and granules are generally applied at the strength purchased. Unless otherwise indicated, emulsifiable concentrates, wettable powders and powders are to be diluted with water, the amount depending on the output of the equipment, and applied as spr. ys.

The insecticides and formulations opposite each insect are to be used separately unless mixtures are indicated by plus (+) signs.

A single entry in a box applies to all the insecticides and formulations opposite that box, except as specified.

A dash in the tolerance column means that no tolerance had been established at the time this guide was prepared. A dash in other columns indicates that there are no data for the insecticide that is opposite it on the same line.

The following abbreviations are used:

Bait.....	B
Dust.....	D
Emulsifiable concentrate.....	EC
Granules.....	G
Spray.....	S
Wettable powder.....	WP
Solution.....	soln.

Several insecticides that were once known by their proprietary names now have common names which are used in the following tables. The common names and their earlier designations are as follows: carbaryl (Sevin); carbophenothion (Trithion); coumaphos (Co-Ral); dichlorvos (DDVP); dioxathion (Delnav); endosulfan (Thiodan); fenthion (Baytex); mevinphos (Phosdrin); naled (Dibrom); tetradifon (Tedion); and trichlorfon (Dipterex, Dylox and Neguvon).

Mention of a proprietary product in this publication does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture and does not imply its approval by the Department to the exclusion of other products that may also be suitable.

LEGUME AND GRASS INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ALFALFA							
Alfalfa caterpillar	Carbaryl	100	--	WP	1 lb.	If there are 10 or more caterpillars per sweep of net, usually when alfalfa is 1/3 grown.	Guthion, mevinphos, and parathion should be applied only by a trained operator. Do not apply Guthion or trichlorfon more than once per cutting.
	Methoxychlor	100	7	EC	3/4-1 lb.		
	Mevinphos	1	1	EC	2 oz.		
	Trichlorfon	--	14	Soluble powder	4-5 oz.		
Alfalfa weevil Larvae	Diazinon	40 fresh alfalfa 10 hay	2 grazing 10 cutting for hay	EC	1 lb.	In spring when most of the tips are beginning to show feeding. A second application may be necessary. If harvest infestation is severe, treat stubble as soon as crop is removed.	
	Guthion	2 fresh forage 5 hay	21	EC	8 oz.		
	Malathion	135	--	EC	1-1 1/4 lb.		
	Methoxychlor	100	7	EC	1-1 1/2 lb.		
	Parathion	1	15	EC	4 oz.		
Clover leaf weevil	Malathion	135	--	EC	1 lb.	In spring when alfalfa is 2-6 in. tall.	
	Methoxychlor	100	7	EC	1 lb.		
Cutworms	Mevinphos	1	1	EC	6 oz.	In evening when worms are active.	
	Parathion	1	15	EC	6 oz.		
	Trichlorfon	--	14	Soluble powder	1 lb.		

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ALFALFA (con.)							
Grasshoppers	Carbaryl	100	--	Sprayable	3/4-1 lb.	After cutting and before plants are 6 in. tall. A second application may be necessary.	Mevinphos should be applied only by a trained operator. Do not feed plants treated with DDT or toxaphene, or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter.
	Diazinon	40 fresh alfalfa 10 hay	4 grazing 7 cutting for hay	EC	1/2 lb.		
	Malathion	135	--	EC	1 lb.		
	Mevinphos	1	1	EC	1/4-1/2 lb.		
	Naled	--	4	EC	3/4 lb.		
Lygus bugs, leaf-hoppers, and thrips On seed crop in West	DDT	--	--	D EC	2 lb. 1 1/2-2 lb.	As soon as buds appear.	Do not apply DDT to forage to be sold commercially or shipped interstate. Treat alfalfa in bloom only when bees and other pollinators are not visiting plants. Do not apply trichlorfon more than once per cutting.
				EC	1/2 lb.	During bloom.	
	Malathion	135	--	EC	1 lb.		
	Trichlorfon	--	14	Soluble powder	1 lb.		
	Toxaphene	--	--	D EC	2 lb. 1 1/2 lb.	During bloom 3-4 weeks after bud treatment.	
Meadow spittlebug	<u>Spring treatment</u> Methoxychlor	100	7	EC	1 lb.	Within week after eggs begin to hatch.	
	<u>Fall treatment</u> Methoxychlor	100	7	EC	1 1/2 lb.	In early September.	

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ALFALFA (con.)							
Mormon cricket	Aldrin	0	30	<u>Baits*</u> EC or WP for wet bait; oil soln. for dry bait	<u>In 100 lb. bait</u> 2 oz.	Spread 10-20 lb. per acre ahead of advancing band of crickets.	Demeton, mevinphos, parathion, and tepp should be applied only by a trained operator.
	Chlordane	--	--		1/2 lb.		
	Toxaphene	--	--		1 lb.		Store bait where livestock cannot reach it; do not pile on ground. Keep livestock off air strips where planes are being loaded with bait. Try not to spill bait; clean up any that is spilled.
Pea aphid On hay or seed crop	Demeton	5 fresh forage 12 hay	21	EC	4 oz.	Before bloom or in evening during bloom.	
	Diazinon	40 fresh alfalfa 10 hay	4 grazing 7 cutting for hay	EC	8 oz.		Do not apply demeton more than once per cutting.
	Malathion	135	--	EC	10-16 oz.		
	Mevinphos	1	1	EC	2 oz.		Do not feed plants treated with aldrin, chlordane, or toxaphene, or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter.
	Naled	--	4	EC	1 lb.		
	Parathion	1	15	EC	4 oz.		
	Tepp	--	3	EC	1/2 lb.		
Potato leafhopper	Carbaryl	100	--	WP	1 lb.	When alfalfa is about half grown or earlier if insects become abundant.	
	Malathion	135	--	EC	3/4 lb.		
	Methoxychlor	100	7	EC	1/2 lb.		

* Prepare according to directions in FB 2081.

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ALFALFA (con.)							
Red harvester ant	Carbon disulfide	--	--	Fumigant	<u>Per colony</u> 4 fl. oz.	Pour into entrance hole of nest.	Demeton, mevinphos, and parathion should be applied only by a trained operator. Carbon disulfide should be applied by a person thoroughly familiar with its hazards.
	Chlordane	--	--	5% D	1/2 lb. D	Spread thinly in 4-6 in. band in circle 5-6 ft. in diameter around nest entrance.	
Spider mites	Demeton	5 fresh forage 12 hay	21	EC	4 oz.	Before plants bloom.	Do not feed plants treated with chlordane or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter. Do not apply demeton more than once per cutting. Treat alfalfa in bloom only when bees and other pollinators are not visiting plants.
Spotted alfalfa aphid	Demeton	5 fresh forage 12 hay	21	EC	4 oz.	To seedlings when 1/2-1 aphid per plant, and to older stands when 5 aphids per leaf and honeydew are found.	
	Diazinon	40 fresh alfalfa 10 hay	4 grazing 7 cutting for hay	EC	8 oz.		
	Malathion	135	--	EC	10 oz.		
	Mevinphos	1	1	EC	2 oz.		
	Parathion	1	15	EC	4 oz.		
Thrips (See Lygus bugs)							
Tortricid moth	Parathion	1	15	EC	1/2 lb.	In May as soon as overwintered larvae start tying top leaves.	

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ALFALFA (con.)	Trichlorfon	--	14	Soluble powder	4 oz.	When worms are present in damaging numbers.	Do not feed plants treated with DDT or toxaphene, or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter.
Webworms							
Yellow-striped armyworm On seed crop	DDT	--	--	D or EC	1 1/2 lb.	When feeding on flower racemes.	Do not apply DDT to forage to be sold commercially or shipped interstate. Do not apply trichlorfon more than once per cutting. Treat alfalfa in bloom only when bees and other pollinators are not visiting plants.
	Malathion	135	--	EC	1 lb.		
	Toxaphene	--	--	D or EC	2 lb.		
	Trichlorfon	--	14	Soluble powder	1 lb.		
CLOVER	Malathion	135	--	EC	1 lb.	In spring when clover is 2-6 in. tall.	Mevinphos should be applied only by a trained operator. Do not feed plants treated with DDT, or ensilage made from treated plants to poultry, dairy animals, or animals being finished for slaughter.
Clover leaf weevil							
	Methoxychlor	100	7	EC	1 lb.		
Clover seed weevil On seed crop	DDT	--	--	D or EC	1 lb.	When 2% of heads are withered and brown.	Do not apply DDT to forage to be sold commercially or shipped interstate.
Grasshoppers	Carbaryl	100	--	Sprayable	3/4-1 lb.	When grasshoppers are young. A second application may be necessary.	Treat clover in bloom only when bees and other pollinators are not visiting plants.
	Malathion	135	--	EC	1 lb.		
	Mevinphos	1	1	EC	1/4-1/2 lb.		
	Naled	--	4	EC	3/4 lb.		

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CLOVER (con.)							
Meadow spittlebug	<u>Spring treatment</u> Methoxychlor	100	7	EC	1 lb.	Within week after eggs begin to hatch.	Treat clover in bloom only when bees and other pollinators are not visiting plants.
	<u>Fall treatment</u> Methoxychlor	100	7	EC	1 1/2 lb.	In early September.	
GRASS--Range and Pasture							Mevinphos and parathion should be applied only by a trained operator.
Armyworm and fall armyworm	Parathion	1	15	EC	4 oz.	When larvae are small.	Do not apply mevinphos to grass to be cut for hay to be shipped interstate.
	Toxaphene	--	--	EC	1 1/2-2 lb.		
Grasshoppers	Aldrin	--	--	EC or oil soln.	2-3 oz.	When hatching of dominant species is completed and before eggs are laid. Use any of these materials on range being held for winter and spring pasture not being grazed but only carbaryl, malathion, or toxaphene on range being grazed by feeders, slaughter animals, or breeding stock.	Do not treat pasture with toxaphene more than once per season. Do not graze dairy animals in treated fields. Do not graze meat animals in treated fields within 6 weeks of slaughter. Toxaphene should not be used near lakes, streams, or ponds. Do not apply toxaphene to forage to be sold commercially or shipped interstate. Do not apply aldrin more than once per season. Do not graze dairy animals on grass treated with aldrin or heptachlor. Do not graze animals being finished for slaughter on pastures treated with aldrin or heptachlor for 90 days after treatment.
	Carbaryl	100	--	Sprayable	1/2-1 lb.		
	Heptachlor	0	--	EC or oil soln.	2-3 oz.		
	Malathion	135	--	EC or oil soln.	1 lb.		
	Mevinphos	--	1	EC	4-8 oz.		
	Toxaphene	--	--	EC or oil soln.	1-1 1/2 lb.		

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRASS--Range and Pasture (con.)				<u>Baits*</u>	<u>In 100 lb. bait</u>		
Mormon cricket	Aldrin	--	--	EC or WP for wet bait; oil soln. for dry bait	2 oz.	Spread bait ahead of advancing band of crickets at 10-20 lb. per acre.	Store bait where livestock cannot reach it; do not pile on ground. Keep livestock off air strips where planes are being loaded with bait. Try not to spill bait; clean up any that is spilled. Do not apply aldrin bait more than once per season. Do not graze dairy animals for 90 days after applying aldrin bait.
	Chlordane	--	--		1/2 lb.		
	Toxaphene	--	--		1 lb.		
White-fringed beetles	DDT	--	--	D, EC, G, or WP	25 lb.	Only in winter and early spring to noncultivated land not used for grazing, under general direction of Federal or State white- fringed beetle personnel.	Do not apply DDT or dieldrin to grass that is to be cut for hay.
	Dieldrin	--	--	D, EC, G, or WP	3-5 lb.		
GRASS--Wastelands, Roadsides, and Con- servation Reserve Lands, not Grazed							
Grasshoppers	Aldrin	--	--	EC or oil soln.	2-3 oz.	After hatching and before movement to crops takes place.	Toxaphene should not be used near lakes, streams, or ponds.
	Carbaryl	100	--	Sprayable	1/2-1 lb.		
	Chlordane	--	--	EC or oil soln.	3/4-1 1/2 lb.		
	Dieldrin	--	--	EC or oil soln.	1/2-2 oz.		
	Heptachlor	0	--	EC or oil soln.	2-3 oz.		
	Malathion	135	--	EC or oil soln.	1-2 lb.		
	Toxaphene	--	--	EC or oil soln.	1-1 1/2 lb.		

* Prepare according to directions in FB 2081.

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRASS--Lawns and Turf Areas, not Grazed					<u>Per 1,000 sq. ft.</u>		
Ants	Aldrin	--	--	EC, WP, D, or G	1 oz.	To entire area or to individual nests. Sprinkle after application.	Do not apply insecticides to lawns or other turf areas when people or animals are on them, and do not allow insecticides to drift to areas where they might injure people or animals or contaminate food or feed. Keep children and pets off treated lawns and other turf areas until the insecticide has been washed off by sprinkling, and the grass has completely dried.
	Chlordane	--	--	EC, WP, D, or G	4 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Armyworms and fall armyworms	Chlordane	--	--	EC, WP, D, or G	2 oz.	As soon as infestation appears and while worms are small.	
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Billbugs	Chlordane	--	--	EC, WP, D, or G	1/2 lb.	When damage is observed.	
	V-C 13	--	--	EC	9 oz.		
Cicada-killer wasp and wild bees	Chlordane	--	--	EC, WP, D, or G	2 oz.	In late July and August when nests are numerous.	
	DDT	--	--	EC, WP, D, or G	2 oz.		
Chinch bugs and false chinch bug	Carbaryl	--	--	WP	4 oz.	To lawns or other turf areas as soon as damage occurs. A second application may be needed in 7-10 days.	
	Chlordane	--	--	EC, WP, or G	4 oz.		
	DDT	--	--	EC, WP, or G	4 oz.		
	Diazinon*	--	--	EC or WP	3 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	V-C 13*	--	--	EC	9 oz.		

* Use when chinch bugs have developed resistance to DDT.

* Use when chinch bugs have developed resistance to other insecticides.

Use Pesticides Safely—Follow the Label

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRASS--Lawns and Turf Areas, not Grazed (con.)					<u>Per 1,000 sq. ft.</u>		
Cutworms	Chlordane	--	--	EC, WP, D, or G	2 oz.	In late afternoon.	Do not apply insecticides to lawns or other turf areas when people or animals are on them, and do not allow insecticides to drift to areas where they might injure people or animals or contaminate food or feed. Keep children and pets off treated lawns or other turf areas until the insecticide has been washed off by sprinkling, and the grass has completely dried.
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
European chafer and masked chafers Grubs	Aldrin	--	--	EC, WP, D, or G	1 oz.	Apply when ground is not frozen. Sprinkle lightly after application.	
	Chlordane	--	--	EC, WP, D, or G	4 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Green June beetle Grubs	Aldrin	--	--	EC, WP, D, or G	1 oz.	In mid and late summer when grubs are young. Water after application.	
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Japanese beetle Grubs	Aldrin	--	--	EC, WP, D, or G	1 oz.	When examination of turf shows grubs are present. Apply when ground is not frozen and wash into soil.	
	Chlordane	--	--	EC, WP, D, or G	4 oz.		
	DDT	--	--	EC, WP, D, or G	9 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
	Toxaphene	--	--	EC, WP, D, or G	9 oz.		

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LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRASS--Lawns and Turf Areas, not Grazed (con.)	Milky disease spores	--	--	D	Per 1,000 sq. ft.	To permanent turf when grub population is less than 10 per square foot. Mix dosage with several times its volume of sand, soil or fertilizer.	Do not apply insecticides to lawns or other turf areas when people or animals are on them, and do not allow insecticides to drift to areas where they might injure people or animals or contaminate food or feed.
Japanese beetle (con.) Grubs (con.)					8 oz. spores broadcast 2 gm. spores per spot at 3, 5, or 10 ft. intervals		
Leafhoppers	DDT	--	--	EC, WP, or D	3/4 oz.	When insects are abundant.	Keep children and pets off treated lawns or other turf areas until the insecticide has been washed off by sprinkling, and the grass has completely dried.
	Malathion	--	--	EC, WP, or D	3/4 oz.		
Mole crickets	Chlordane	--	--	EC, WP, D, or G	2 oz.	As soon as damage occurs.	Do not apply spore dust and chemical insecticide to same turf.
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Sod webworms	Aldrin	--	--	EC, WP, or D	1 oz.	In late afternoon or evening. A second application may be necessary.	
	Carbaryl	--	--	WP	4 oz.		
	Chlordane	--	--	EC, WP, D, or G	2 oz.		
	DDT	--	--	EC, WP, or D	2 oz.		
	Diazinon	--	--	EC or WP	4 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
	Toxaphene	--	--	EC, WP, or G	2 oz.		

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRASS--Lawns and Turf Areas, not Grazed (con.)					<u>Per 1,000 sq. ft.</u>		
White grubs	Aldrin	--	--	EC, WP, D, or G	1 oz.	When examination of turf shows grubs are present. Preferably in late summer and early fall when grubs are small. Water lightly after application.	Do not apply insecticides to lawns or other turf areas when people or animals are on them, and do not allow insecticides to drift to areas where they might injure people or animals or contaminate food or feed.
	Chlordane	--	--	EC, WP, D, or G	4 oz.		
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
Wireworms	Chlordane	--	--	EC, WP, D, or G	2 oz.	When damage is noted and worms are present.	Keep children and pets off treated lawns or other turf areas until the insecticide has been washed off by sprinkling, and the grass has completely dried.
	Dieldrin	--	--	EC, WP, D, or G	1 oz.		
	Heptachlor	--	--	EC, WP, D, or G	1 oz.		
PEANUTS		Peanuts unless otherwise indicated			<u>Per acre</u>		
Corn earworm	Carbaryl	5 100 hay	--	D or WP	3/4-1 lb.	When larvae are young.	Do not feed plants treated with DDT or toxaphene or ensilage made from treated plants to poultry, dairy animals, or animals being finished for slaughter.
	DDT	7	--	D	3/4 lb.		
Cutworms	DDT	7	--	D or EC	1 1/2-2 lb.	As soon as damage is noted.	
	Toxaphene	7	--	D or EC	1 1/2-2 lb.		

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEANUTS (con.)		Peanuts unless otherwise indicated					
Fall armyworm	Carbaryl	5 100 hay	--	D or WP	12 oz.	When larvae are young.	Parathion and phorate should be applied only by a trained operator. Do not graze livestock on immature peanut plants after phorate treatment. Do not feed plants treated with DDT or toxaphene, or ensilage made from treated plants to poultry, dairy animals, or animals being finished for slaughter.
	Parathion	1	15	EC	4 oz.		
	Toxaphene	7	--	D or EC	2 lb.		
Potato leafhopper	Carbaryl	5 100 hay	--	D or WP	1 lb.	About July 10, and then at 3-week intervals.	
	DDT	7	--	D or EC	8 oz.		
	Malathion	8 0 hay	30	D or EC	1 lb.		
Southern corn rootworm	Diazinon	--	--	EC or G	3 lb.	To row just prior to pegging and immediately work into upper 3-4 in. of soil.	
Thrips	DDT	7	--	D or EC	12 oz.	As soon as injury appears and again 10 days later.	
	Phorate	--	--	G	1 lb.	In furrow at planting time.	

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEANUTS (con.)	Carbaryl DDT Methoxychlor Toxaphene	Peanuts unless otherwise indicated	-- -- 7 --	WP D D D	1 lb. 1/2-1 lb. 1 lb. 1 1/2 lb.	A few days after eggs hatch or as soon as feeding is noted.	Do not feed plants treated with DDT or toxaphene, or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter.
Velvetbean caterpillar		5 100 hay					
		7					
		14 100 forage					
		7					
White-fringed beetles	DDT	7	--	D, EC, G, or WP	Broadcast 10 lb. Row 2-3 lb.	Broadcast when preparing soil for planting and immediately work into upper 3 in., or apply insecticide alone or mixed with fertilizer in row at time of planting.	
SOYBEANS	Carbaryl	Forage unless otherwise indicated	--	D or WP	1 1/2 lb.	When blossoms fall.	
Corn earworm		100 5 beans					

LEGUME AND GRASS INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SOYBEANS (con.)		Forage unless otherwise indicated					
Green cloverworm	Carbaryl	100 5 beans	--	D or WP	1 1/2 lb.	When larvae are small and number 5-10 per foot of row.	Carbophenothion should be applied only by a trained operator.
Mexican bean beetle	Carbaryl	100 5 beans	--	WP	1 lb.		
	Malathion	--	1	D, EC, or WP	1 lb.	To under surface of leaves when beetles appear.	Do not feed forage treated with carbophenothion to livestock.
	Methoxychlor	100	7	D or WP	1 1/2 lb.		
Mites	Carbophenothion	0.8 beans	7	EC or WP	3/4 lb.	To field borders when mites move in or to entire field when infestation is general.	
Velvetbean caterpillar	Carbaryl	100 5 beans	--	D or WP	1 1/4 lb.		
	Methoxychlor	100	7	D	1 lb.	A few days after eggs hatch or as soon as feeding by larvae is noted.	
VETCH (Seed Crop)							
Vetch bruchid	DDT	--	--	D or EC	3/4 lb.	As soon as pods appear.	Do not feed plants treated with DDT, or ensilage made from treated plants, to poultry, dairy animals, or animals being finished for slaughter.
	Malathion	--	7	EC	1 lb.		
	Methoxychlor	--	7	EC	1 lb.		
	Naled	--	4	EC	1 lb.		

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CORN							
Armyworm	DDT	--	--	EC	1 1/2 lb.	When larvae are young.	Parathion should be applied only by a trained operator. Do not feed forage, including ensilage, treated with DDT or toxaphene to dairy animals or animals being finished for slaughter.
	Parathion	1	12	EC	1/4 lb.		
	Toxaphene	7	--	EC	1 1/2-2 lb.		
Chinch bug Border rows	Dieldrin	0	60	EC	1/4 lb.	To base of plants where bugs congregate; coat or wet bugs.	
	Toxaphene	7	--	EC	2 lb.		
Barrier strips	Dieldrin	0	60	EC	1/2 lb.	Strip 4 rods wide, half along edge of cornfield and half along edge of small grain, and strip across each end; repeat 1 or 2 weeks later if needed.	
Corn earworm	Carbaryl	5 kernels plus cob with husk removed	--	WP	1 1/2 lb. in 25 gal.	On larvae in whorl (bud-worm damage) 1 or 2 applications at a pressure of 100-140 lb./sq. in., directed so spray will run into whorls of plant before tasseling and silking.	
		25 fodder or forage	--				
	DDT	--	--	EC	2 lb. in 25 gal.	On larvae in silks and ears (seed corn), at a pressure of 100-140 lb./sq. in., at 1 or 2 day intervals beginning on day silks appear; wet silks thoroughly. In areas of heavy infestation, especially in the South, as many as 5-8 applications may be required.	

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CORN (con.)							
Corn rootworms	Aldrin	0	--	G, EC, or fertilizer mixture	1-2 lb.	Minimum dosage to row or hills when planting; maximum broadcast before planting and immediately work into upper 3-4 in. of soil. Apply diazinon to row only when planting. Apply Compound 4072 to field corn only.	Parathion and phorate should be applied only by a trained operator. Do not feed forage, including ensilage, treated with aldrin or DDT to dairy animals, or that treated with DDT emulsion or dust to animals being finished for slaughter; do not feed forage treated with DDT granules within 90 days of slaughter to dairy animals or animals being finished for slaughter.
	Compound 4072 *	--	--	G	1 lb.		
	Diazinon *	0	--	G	1 lb.		
	Heptachlor	0	--	G, EC, or fertilizer mixture	1-2 lb.		
	Parathion *	1	--	G	1 lb.		
	Phorate *	0	--	G	1 lb.		
Cutworms and general soil insects	Aldrin	0	--	EC	1-2 lb.	Minimum dosage in band over row when planting; maximum broadcast before planting and immediately work into upper 3-4 in. of soil.	
	Heptachlor	0	--	EC	1-2 lb.		
European corn borer	Carbaryl	5 kernels plus cob with husk removed	--	WP G	1 1/2 lb. 1 1/2 lb.	When 3/4 of plants show first-generation larvae feeding in whorl and again 7 days later if needed. Treat for second generation when there are 100 egg masses per 100 plants. Seed corn fields should be treated when 25-50% of plants show leaf feeding.	Do not apply aldrin more than once. Do not apply heptachlor to soils where hops may be grown as it may adversely affect the hop plant.
		25 fodder or forage	--				
	DDT	--	--	EC D G	1 1/2 lb. 2 lb. 1 lb.		
	Diazinon	0.75 kernel and cob with husk removed	10	G	1 lb.		
		40 corn forage					

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* Use when rootworms have developed resistance to other insecticides.

Use Pesticides Safely—Follow the Label

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CORN (con.)							
European corn borer (con.)	Endrin	--	45	EC G	1/4 lb. 1/5-1/4 lb.	When 3/4 of plants show first-generation larvae feeding in whorl and again 7 days later if needed. Treat for second generation when there are 100 egg masses per 100 plants. Seed corn fields should be treated when 25-50% of plants show leaf feeding.	Endrin, EPN, and parathion should be applied only by a trained operator. Do not feed forage, including ensilage, treated with DDT to dairy animals, or that treated with DDT emulsion or dust to animals being finished for slaughter; do not feed forage treated with DDT granules within 90 days of slaughter.
	EPN	3	14	G WP	1/5 lb. 1/4 lb.		
	Toxaphene	7	--	G	1 1/2-2 lb.		
Fall armyworm Larvae in whorl	Carbaryl	5 kernels plus cob with husk removed 25 fodder or forage	-- --	WP	1 1/4 lb. in 25 gal.	One or two applications directed into whorls from above.	Do not feed forage treated with toxaphene, or more than one application of endrin, to dairy animals or animals being finished for slaughter.
	DDT	--	--	EC or G D	1-1 1/2 lb.		
	Endrin	--	45	EC	3-4 oz.		
	Parathion	1	12	EC	1/4 lb.		
	Toxaphene	7	--	EC D	1 1/2-2 lb. 2 lb.		
Larvae attacking ears	Carbaryl	5 kernels plus cob with husk removed 25 fodder or forage	1 7	D or WP	1 1/4 lb.	One or two applications when larvae are young, directed at ear zone.	
	DDT	--	--	EC	1 1/2-2 lb.		

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CORN (con.)							
Flea beetles	Dieldrin	0	60	EC	1/3-1/2 lb.	When plants are small.	Do not feed forage, including ensilage, treated with chlordane or toxaphene to dairy animals or animals being finished for slaughter
Grasshoppers	Aldrin	0	21 (2 oz.) 30 (4 oz.)	EC	2-4 oz.	To hatching areas when nymphs are young.	
	Carbaryl	5 kernels plus cob with husk removed	--	WP	1/2-1 lb.		
		25 fodder or forage	--	WP	1/2-1 lb.		
	Chlordane	0.3	--	EC	3/4-1 1/2 lb.		
	Diazinon	0.75 kernels plus cob with husk removed	2	EC	8-12 oz.		
		10 corn forage					
	Dieldrin	0	40	EC	1-2 oz.		
	Malathion	2 kernels plus cob with husk removed	5	EC	1 lb.		
		8 forage	5				
	Toxaphene	7	--	EC	1-1 1/2 lb.		Store bait where livestock cannot reach it; do not pile on ground. Keep livestock off air strips where planes are being loaded with bait. Try not to spill bait; clean up any that is spilled.
Mormon cricket				Baits *	In 100 lb. bait		Spread bait ahead of advancing band of crickets at 10-20 lb. per acre.
	Aldrin	0	21	EC or WP for wet bait; oil soln. for dry bait	2 oz.		
	Chlordane	--	--		1/2 lb.		
	Toxaphene	--	--		1 lb.		

* Prepare according to directions in FB 2081.

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CORN (con.)							
Southwestern corn borer	Endrin	--	--	G	1/2 lb.	3 applications 7 days apart when second-generation borers are first observed.	Endrin and parathion should be applied only by a trained operator.
Spider mites	Parathion	1	12	D or EC	1/2 lb.	On foliage as needed.	Do not apply aldrin more than once.
Sugarcane beetle	Aldrin	0	--	EC or G	1 lb.	6-8 in. band on top of row when planting. Aldrin may also be applied as soon as possible after corn comes up.	Do not apply heptachlor to soils where hops may be grown as it may adversely affect the hop plant.
	Heptachlor	0	--	EC or G	1 lb.		
Sugarcane borer	Endrin	--	--	G	1/2 lb.	3 times 10-14 days apart when second-or third- generation borers are first observed.	Do not feed forage, including ensilage, treated with aldrin or endrin to dairy animals or animals being finished for slaughter.
White grubs	Aldrin	0	--	EC or G	1 1/2-2 lb.	Broadcast 2-3 weeks before planting and immediately work into upper 3-4 in. of soil.	
	Heptachlor	0	--	EC or G	1 1/2-2 lb.		
Wireworms	Aldrin	0	--	EC or G	1 1/2-2 lb.	Broadcast before planting and immediately work into upper 3-4 in. of soil.	
	Heptachlor	0	--	EC or G	1 1/2-2 lb.		
RICE							
Grape colaspis	Aldrin	--	--	D or WP	1/2 lb./100 lb. seed	To seed before planting.	Do not use treated seed for food or feed.
	Heptachlor	--	--	D or WP	1/2 lb./100 lb. seed		
Rice water weevil	Aldrin	--	--	D or WP	1/4 lb./100 lb. seed		
	Heptachlor	--	--	D or WP	1/4 lb./100 lb. seed		

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
RICE (con.)							
Stink bug	Carbaryl	5 grain 100 straw	14	WP	1 lb.	About 1 week after heads appear. Two applications may be needed if infestation is severe.	Methyl parathion and phosphamidon should be applied only by a trained operator.
	Malathion	8	7	EC	3/4-1 lb.		Do not feed straw treated with phosphamidon to dairy animals or animals being finished for slaughter.
	Methyl parathion	0	15	EC	1/4 lb.		
	Phosphamidon	--	21	EC	1/8-1/4 lb.		
SORGHUM							
Corn earworm on heads for grain	Carbaryl	10 grain 100 forage	21 1	WP	1 1/2 lb.	When larvae are small.	Endrin and mevinphos should be applied only by a trained operator.
	Mevinphos	1	3	EC	1/2 lb.		
Chinch bug Border rows	Dieldrin	0	60	EC	1/4 lb.	To base of plants where bugs congregate; coat or wet bugs.	Do not apply endrin more than once.
	Toxaphene	5 grain	28	EC	2 lb.		
Barrier strips	Dieldrin	0	60	EC	1/2 lb.	Strip 4 rods wide, half along edge of sorghum field and half along edge of small grain, and strip across each end; repeat 1 or 2 weeks later if needed.	Do not apply toxaphene to sorghum more than once after heads begin to form.
Fall armyworm	Carbaryl	10 grain 100 forage	21 1	WP	1 1/2 lb.	When larvae are young.	Do not feed forage or straw treated with toxaphene to dairy animals or animals being finished for slaughter, or allow such animals to graze on fields treated with toxaphene.
	DDT	--	--	EC D	1 lb. 2 lb.		
	Endrin	--	35	EC	3-4 oz.		
	Toxaphene	5 grain	28	EC D	1 1/2-2 lb. 2 lb.		
Continued on page 21							

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SORGHUM (con.)	Carbaryl DDT	10 grain 100 forage --	21 1 --	WP EC	1 1/2 lb. 2 lb.	To entire plant before heads appear.	Mevinphos should be applied only by a trained operator. Do not feed forage treated with DDT to dairy animals or animals being finished for slaughter. Do not apply DDT to sorghum after heads begin to form unless heads are being produced for seed. Do not feed forage or straw treated with toxaphene to dairy animals or animals being finished for slaughter. Do not apply toxaphene more than once after heads begin to form.
Fall armyworm (con.) Larvae in whorl (budworm damage)							
Flea beetles							
Grasshoppers	Dieldrin	0	60	EC	1/3-1/2 lb.	When plants are small.	
	Dieldrin	0	40	EC	1-2 oz.	To hatching areas when nymphs are young. Apply dieldrin only once.	
	Toxaphene	5	28	EC	1-1 1/2 lb.		
Sorghum midge on heads for seed	DDT	--	--	D	1 1/4 lb.		
Sorghum webworm	Carbaryl	10 grain 100 forage	21 1	WP	1 1/2 lb.	As soon as infestation is found.	
	Mevinphos	1	3	EC	1/2 lb.		
SMALL GRAINS-- Barley, Oats, Wheat, and Rye	DDT Dieldrin Parathion Toxaphene	-- 0.1 grain 0.75 straw 1 (except on rye) 5	-- 7 7 15 --	EC EC EC EC	1 1/2 lb. 1/4 lb. 1/4 lb. 1 1/2 lb.	When larvae are young.	Demeton and parathion should be applied only by a trained operator.
Armyworm							Do not apply DDT after heads begin to form.
							Do not allow dairy animals or animals being finished for slaughter to graze on fields treated with DDT or toxaphene.
Brown wheat mite	Demeton	0.75 grain (except on rye) 5 forage and straw (except on rye)	45 21	EC	1/4 lb.	When damage appears.	Do not apply DDT to barley or parathion to rye.
	Parathion	1 (except on rye)	15	EC	1/2 lb.		Do not apply demeton more than twice per season. Allow at least 14 days between applications.

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SMALL GRAINS-- Barley, Oats, Wheat, and Rye (con.)							
Cereal leaf beetle	Malathion	8	7	EC	1 lb.	When damage by adults appears, or when larvae are young.	Endrin and parathion should be applied only by a trained operator.
Chinch bugs Barrier strips	Dieldrin	0.1 grain 0.75 straw	7 7	EC	1/2 lb.	Strip 4 rods wide, half along edge of cornfield and half along edge of small grain, and strip across each end; repeat 1 or 2 weeks later if needed.	Do not apply DDT after heads begin to form.
Corn leaf aphid	Parathion	1 (except on rye)	15	EC	1/4 lb.	On foliage as needed.	Do not apply endrin more than once.
Cutworms	DDT	--	--	EC	1 1/2 lb.	When larvae are young.	Do not allow dairy animals or animals being finished for slaughter to graze on fields treated with DDT or toxaphene.
	Endrin	--	45	EC	3-4 oz.		
	Toxaphene	5	14 barley 7 others	EC	1 1/2 lb.		
Fall armyworm	DDT	--	--	EC D	1 lb. 2 lb.		Do not apply DDT to barley or parathion to rye.
	Endrin	--	45	EC	3-4 oz.		
	Parathion	1 (except on rye)	15	EC	1/4 lb.		
	Toxaphene	5	--	EC D	1 1/2-2 lb. 2 lb.		
Grasshoppers	Aldrin	0.1 grain 0.75 straw	7 30	EC	2-4 oz.	To hatching areas when nymphs are young.	Do not allow grazing on fields treated with chlordane.
	Chlordane	--	--	EC	3/4-1 1/2 lb.		
	Dieldrin	0.1 grain 0.75 straw	7 7	EC	1-2 oz.		
	Malathion	8	7	EC	1 lb.		
	Toxaphene	5	--	EC	1-1 1/2 lb.		

CORN, RICE, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SMALL GRAINS-- Barley, Oats, Wheat, and Rye (con.)							
Greenbug	Demeton	0.75 grain (except on rye) 5 forage and straw (except on rye)	45 21	EC	1/4 lb.	When temperature is 50° F. or above.	Demeton, methyl parathion, parathion, and phosphamidon should be applied only by a trained operator.
	Methyl parathion	0	15	EC	1/4 lb.		Do not apply demeton or parathion to rye.
	Parathion	1 (except on rye)	15	EC	1/4 lb.		
	Phosphamidon *	--	30	EC	1/4-1/2 lb.		Do not apply chlordane after heads begin to form.
Mormon cricket				<u>Baits **</u>	<u>In 100 lb. bait</u>		
	Aldrin	0.1 grain 0.75 straw	7 30	EC or WP for wet bait; oil soln. for dry bait	2 oz.	Spread bait ahead of advancing band of crickets at 10-20 lb. per acre.	Do not allow grazing on fields treated with chlordane. Do not allow dairy animals or animals being finished for slaughter to graze on fields treated with toxaphene.
	Chlordane	--	--		1/2 lb.		
	Toxaphene	5	14 barley 7 others		1 lb.		Do not apply demeton more than twice per season. Allow at least 14 days between applications.
Red harvester ant	Carbon disulfide	--	--	Fumigant	4 fl. oz.	Pour into entrance hole of nest.	
	Chlordane	--	--	5% D	1/2 lb.	Spread thinly in 4-6 in. band in circle 5-6 ft. in diameter around nest entrance.	Store bait where livestock cannot reach it; do not pile on ground. Keep livestock off airstrips where planes are being loaded with bait.
	Dieldrin	0.1 grain 0.75 straw	7 7	1.5% D	3/4 lb.		Try not to spill bait; clean up any that is spilled.
Winter grain mite	Malathion	8	7	EC	3/5 lb.	Apply as soon as injury appears.	
	Parathion	1 (except on rye)	15	EC	1/4-1/2 lb. (Maximum for airplane application)		

* Recommended for use on wheat only.

** Prepare according to directions in FB 2081.

SUGARBEET AND SUGARCANE INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SUGARBEET							
Alfalfa looper	Parathion	--	15	D, EC, or WP	1/2 lb.	On foliage along edge of field when loopers appear.	Demeton, Di-Syston, parathion, phorate, phosphamidon, or tepp should be applied only by a trained operator. Do not apply demeton more than 3 times during the season. When benzene hexachloride, DDT, or endosulfan is used on seed crop, do not feed seed or seed refuse to livestock or poultry.
	Trichlorfon	--	28 *	Soluble powder	1 1/2 lb.		
Aphids	Benzene hexachloride (seed crop)	--	--	D or EC	1/2 lb. gamma	On foliage when aphids appear.	
	Demeton	5 tops 0.5 roots	30	EC	1/2 lb.		
	Endosulfan (seed crop)	--	--	D or EC	1 lb.		
	Di-Syston	2 tops 0.5 roots	30	G	1 lb.		
	Parathion	--	15	D, EC, or WP	1/2 lb.		
	Phosphamidon	--	45	EC	1 lb.		
	Tepp	0	3	EC	0.4 lb.		
Armyworms	Parathion	--	15	D	1/2 lb.	On foliage of young plants.	
	Trichlorfon	--	28 *	Soluble powder	1 1/2 lb.		
Beet leafhopper on seed crops	DDT	--	--	D, EC, or WP	2 lb.		Mix dry with whole seed. Not practical on processed seed without the use of a sticker.
	Parathion	--	15	D or EC	1/2 lb.		
	Phorate	--	--	44% in carbon D	3 lb./100 lb. seed		
Blister beetles	Carbaryl	100 tops	14	WP	1 lb.	On foliage as needed.	
	Parathion	--	15	D, EC, or WP	1/2 lb.		
Cutworms	Phosphamidon	--	45	EC	1 lb.		
	Trichlorfon	--	28 *	Soluble powder	1 1/2 lb.		

* 14 days if tops are not to be fed to livestock.

SUGARBEET AND SUGARCANE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SUGARBEET (con.)							Carbophenothion and parathion should be applied only by a trained operator.
Flea beetles	Parathion	--	15	D, EC, or WP	1/2 lb.	On foliage as needed.	
Garden symphylan	Parathion	--	--	EC, G, or WP	5 lb.	Broadcast on soil surface before planting and thoroughly work into upper 6 in.	
Grasshoppers	Carbaryl	100 tops	14	WP	1 lb.	On foliage and soil as needed.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Malathion	--	7	EC or WP	2 lb.		
Leaf miners	Parathion	--	15	D, EC, or WP	1/2 lb.	On foliage as needed.	
	Trichlorfon	--	28 *	Soluble powder	1 1/2 lb.		
Lygus bugs On seed crop	Benzene hexachloride	--	--	D or EC	1/2 lb. gamma	On foliage of plants in soft-seed stage.	
	Naled	--	5	EC	1 lb.		
	Parathion	--	15	D or EC	1/2 lb.		
	Toxaphene	--	--	D, EC, or WP	3 lb.		
On sugar crop	Naled	--	5	EC	1 lb.	On foliage as needed.	When benzene hexachloride or toxaphene is used on seed crop, do not feed seed or seed refuse to livestock or poultry.
	Parathion	--	15	D or EC	1/2 lb.		
Spider mites	Carbophenothion	5	14	D, EC, or WP	1 lb.		
	Sulfur	Safe	--	D	30 lb.		
Stink bugs on seed crop	Parathion	--	15	D, EC, or WP	1/2 lb.	On foliage of plants in seed stage.	
	Toxaphene	--	--	D, EC, or WP	6 lb.		

* 14 days if tops are not to be fed to livestock.

SUGARBEET AND SUGARCANE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SUGARBEET (con.)							
Webworms	Parathion	--	15	D, EC, or WP	1/2 lb.	On foliage when insects appear.	Parathion and phosphamidon should be applied only by a trained operator.
	Phosphamidon	--	45	EC	1 lb.		
	Trichlorfon	--	28 *	Soluble powder	1 1/2 lb.		
Wireworms	Diazinon	--	--	G	3 lb.	Broadcast granules on soil and immediately work thoroughly into upper 6-9 in. Soil temperature should be at least 50° F.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Parathion	--	--	G	4 lb.		
SUGARCANE							
Armyworm and fall armyworm	Toxaphene	--	--	EC D	2 lb. 2 lb.	When larvae are young.	Endrin and Guthion should be applied only by a trained operator.
Sugarcane borer	Carbaryl	--	30	G	3 lb.	At 3-week intervals starting after joints begin to form and when 5% of the plants are infested with young larvae which have not yet bored into stalks.	Guthion or endosulfan should not be applied more than 4 times, and endrin not more than 3 times per season.
	Endosulfan	--	60	G	1/2 lb.		
	Endrin	--	45	G	1/3 lb.		
	Guthion	--	30	G	1 1/2 lb.		
Wireworms	Chlordane	--	--	EC	2 lb.	On cane seed pieces in open furrow at time of planting.	Do not graze livestock on fields treated with endosulfan, endrin, or Guthion, or feed bagasse or tops from such treated fields to livestock.
Small soil arthropods	Chlordane	--	--	EC	2 lb.		
							Cane treated with Guthion should be washed before processing.

* 14 days if tops are not to be fed to livestock.

VEGETABLE INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ASPARAGUS							
Asparagus beetle	Carbaryl	10	1	D or WP	1 lb.	On foliage as needed.	Do not apply DDT during cutting season. Do not repeat carbaryl application within 3 days.
	DDT	7	--	D, EC, or WP	1½ lb.		
	Malathion	8	1	D or EC	1¼ lb.		
	Rotenone	Exempt	1	D, extract, or powder	0.1-0.3 lb.		
Cutworms	Toxaphene	--	--	3% Bait; 2½ lb. 40% WP or 1¼ pt. 63% EC + 1-2 qt. light mineral oil in 25 lb. bran	1.2 lb (40 lb. bait)	Broadcast on soil (not on plants) late in afternoon.	Do not apply after edible portions form.
Thrips	Malathion	8	1	D or EC	1-1¼ lb.	On foliage as needed.	
Wireworms	DDT (only on irrigated lands in West)	7	--	EC or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in.	Do not repeat application of DDT or dieldrin for at least 3 years.
	Dieldrin	0.1	--	EC or WP	3 lb.		
	Ethylene dibromide (in West)	10 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
BEANS							
Aphids	Demeton	0.3	21	EC	¼-½ lb.	On foliage as needed.	Do not use demeton, mevinphos or parathion in home garden; should be applied only by a trained operator.
	Diazinon	0.75 beans 10 hay 25 forage	7 beans 4 hay 1 forage	D EC or WP	1.4 lb. ½ lb.		
	Malathion	8	1	D, EC, or WP	1¼ lb.		
	Mevinphos	0.25	1	D, EC, or WP	½ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	15	D, EC, or WP	½ lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEANS (con.)							
Bean leaf beetle	Carbaryl	10	1	D or WP	$\frac{1}{2}$ -1 lb.	On foliage as needed.	Do not use mevinphos in home garden; should be applied only by a trained operator.
	DDT	7	7	D, EC, or WP	1 lb.	Apply DDT sparingly; heavy dosages may injure beans.	
	Rotenone	Exempt	1	D, EC, or powder	$\frac{1}{4}$ lb.		
Bean thrips	DDT	7	7	D or EC	1 lb.		Do not feed plants treated with DDT to dairy animals or animals being finished for slaughter.
	Mevinphos	0.25	1	EC	$\frac{1}{4}$ lb.		
Corn earworm	Carbaryl	10	1	D or WP	1-2 lb.		Do not apply dieldrin after pods begin to form.
	DDT	7	7	D, EC, or WP	$1\frac{1}{2}$ lb.		
	Methoxychlor (home garden only)	14	7*	D or WP	$1\frac{1}{2}$ lb.		
	Naled	--	4	EC	$1\frac{1}{2}$ lb.		
Cowpea curculio	Dieldrin	0	--	G	3 lb.	Broadcast on soil surface shortly before plants begin to bloom but only when plants are dry.	Do not apply toxaphene spray after pods begin to form to beans to be used as green snaps; do not apply toxaphene dust to such beans within 7 days before harvest. Do not feed plants treated with toxaphene or DDT to dairy animals or animals being finished for slaughter.
	Toxaphene	7	--	D, EC, or WP	3 lb.	On foliage at time of blooming; repeat in 3 and 6 days.	
Cucumber beetles	Carbaryl	10	1	D or WP	2 lb.	Same as for corn earworm.	Apply diazinon in 100 gallons of water per acre.
	DDT	7	7	D, EC, or WP	1 lb.		
	Diazinon	0.75 beans 10 hay 25 forage	7 beans 4 hay 1 forage	WP	$\frac{1}{4}$ - $\frac{3}{8}$ lb.		
	Malathion	8	1	D, EC, or WP	$1\frac{1}{4}$ lb.		

* 3 days if plants are not to be used for feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEANS (con.)							
Cutworms (in soil)	DDT	7	7	D, EC, or WP	2 lb.	Broadcast on soil surface, preferably before planting.	Do not use D-D, parathion, or Telone in home garden; should be applied only by a trained operator. Do not apply D-D or Telone within 3 weeks before plant- ing; do not apply to extremely heavy soil or soil which is very wet or very dry. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Toxaphene	7	--	D, EC, or WP	2 lb.		
				3% B	40 lb. B	Broadcast on soil (not plants) late in afternoon.	
Flea beetles	DDT	7	7	D, EC, or WP	1 lb.	On foliage as needed.	
	Methoxychlor (home garden only)	14	7*	D or WP	1½ lb.		
Garden symphylan	Parathion	1	15	G or WP	5 lb.	Broadcast on soil surface before planting and thor- oughly work into upper 6 in.	
	D-D	--	--	Fumigant	300 lb. (30 gal.)	Inject 8 in. deep into fallow soil every 12 in.	
	Telone	--	--	Fumigant	300 lb. (30 gal.)		
Japanese beetle (home garden)	Carbaryl	10	1	D or WP	1-2 lb.	On foliage as needed.	Do not feed plants treated with toxaphene or DDT to dairy animals or animals being finished for slaughter.
	DDT	7	7	D, EC, or WP	1 lb.	Apply DDT sparingly; heavy dosages may injure beans.	
	Malathion	8	1	D, EC, or WP	1¼ lb.		
	Methoxychlor	14	7*	D or WP	1½ lb.		
Lesser cornstalk borer	Aldrin	0	--	EC or G	¾ lb.	Apply in band 3-5 in. wide over seedling plants when ½-1 inch tall.	
	Dieldrin	0	--	EC or G	¾ lb.		
Lima bean pod borer	Carbaryl	10	1	D or WP	2 lb.	On foliage when pods begin to form, and at 10-day intervals.	

* 3 days if plants are not to be used for feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEANS (con.)							
Lygus bugs	Carbaryl	10	1	D or WP	2 lb.	On foliage when pods begin to form.	Do not use carbophenothion Di-Syston, or parathion in home garden; should be applied only by a trained operator.
	DDT	7	7	D, EC, or WP	2 lb.		
	Toxaphene + malathion	7 + 8	--	D, EC, or WP	3 lb. + 1 lb.		
Mexican bean beetle	Carbaryl	10	1	D or WP	$\frac{1}{2}$ -1 lb.	On foliage as needed.	Do not feed plants treated with DDT or toxaphene to dairy animals or animals being finished for slaughter. Do not apply toxaphene spray after pods begin to form to beans to be used as green snaps; do not apply toxaphene dust to such beans within 7 days before harvest. Do not apply carbophenothion more than twice per season.
	Carbophenothion (dry beans only)	0.8 beans 5 vines	21*	EC or WP	$\frac{1}{2}$ lb.		
	Diazinon	0.75 beans 10 hay 25 forage	7 beans 4 hay 1 forage	WP	$\frac{1}{2}$ lb.		
	Malathion	8	1	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Methoxychlor	14	7**	D or WP	1 $\frac{1}{2}$ lb.		
	Naled	--	4	EC	1 $\frac{1}{2}$ lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
	Rotenone	Exempt	1	D, EC, extract, or powder	$\frac{1}{4}$ lb.		
	Di-Syston	0.75 beans 5 vines	60 dry beans	G	1 lb.	Apply in furrow below seed at planting time. Avoid contact of insecticide with seed. Make only 1 application.	
Potato leafhopper	Carbaryl	10	1	D or WP	2 lb.	On foliage as needed.	Apply DDT sparingly; heavy dosages may injure beans.
	DDT	7	7	D, EC, or WP	1 lb.		
Continued on page 31	Malathion	8	1	D, EC, or WP	1 $\frac{1}{4}$ lb.		

* 7 days if plants are not to be used for seed

* 7 days if plants are not to be used for feed

** 3 days if plants are not to be used for feed.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEANS (con.)							
Potato leafhopper (con.)	Methoxychlor	14	7*	D or WP	1½ lb.	On foliage as needed.	Do not use carbophenothion, demeton, or parathion in home garden; should be applied only by a trained operator.
	Parathion	1	15	D, EC, or WP	½ lb.		
Root maggots	Aldrin	0	--	Slurry: 2/3 oz. 75% WP + 3 oz. thiram or captan	1 pt. slurry/100 lb. bean seed	Mix slurry with seed and dry at least 1 hour within 30 days of planting. Do not re-treat commercially treated seed.	Do not feed plants treated with Aramite, DDT, or toxaphene to dairy animals or animals being finished for slaughter.
	Dieldrin	0	--	75% WP in water to make 1 pt.			
	Lindane	10	--				
Salt-marsh caterpillar	Toxaphene	7	--	D, EC, or WP	4 lb.	On foliage when small caterpillars appear.	Do not feed plants treated with Kelthane to meat or dairy animals. Do not apply carbophenothion more than twice per season. Do not apply toxaphene spray after pods begin to form to beans to be used as green snaps; do not apply toxaphene dust to such beans within 7 days before harvest.
Spider mites	Aramite	0	--	D	1 lb. 10 oz.	On foliage as needed.	
	Carbophenothion	0.8 beans 5 vines	21**	D	1.2 lb. ¾ lb.		
	Demeton	0.3	21	EC or WP	¾ lb.		
	Diazinon	0.75 beans 10 hay 25 forage	7 beans 4 hay 1 forage	EC	¼-½ lb.		
	Kelthane	5	7	D	1.4 lb.		
Stink bugs	Carbaryl	10	1	EC or WP	10 oz.		Apply DDT sparingly; heavy dosages may injure beans. Do not apply Aramite while pods are on plants.
	DDT	7	7	D	2 lb.		
	Naled	--	4	D, EC, or WP	1 lb.		
Western bean cutworm	DDT	7	7	EC	1½ lb.	On foliage as soon as cutworms are found. Use sparingly; heavy dosages may injure beans.	

*3 days if plants are not to be used for feed.

**7 days if plants are not to be used for feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEANS (con.)							
Wireworms In East	Aldrin*	0	--	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 inches.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Chlordane*	0.3	--	EC, G, or WP	4-8 lb.		
	Dieldrin*	0	--	EC, G, or WP	2-3 lb.		
	Diazinon	0.75	--	EC, G, or WP	1½-2 lb.		
	Parathion	1	--	EC, G, or WP	3 lb.		
In West	Aldrin	0	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	Do not repeat applications of aldrin, chlordane, DDT, or dieldrin for at least 3 years.
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75 beans 10 hay 25 forage	--	G	3 lb.		
	Dieldrin	0	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
BEET, TABLE							
Aphids	Diazinon	0.75	14	D, EC, or WP	6-8 oz.	On foliage when aphids appear; repeat weekly as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.
	Malathion	8	7	D, EC, or WP	1¼ lb.		
	Mevinphos	1	3	D, EC, or WP	¼-½ lb.		
	Parathion	1	21**	D, EC, or WP	¼-½ lb.		
Beet webworm	DDT	7	--	D, EC, or WP	1½ lb.	On foliage as needed.	Do not use DDT-treated tops for food or feed.
	Pyrethrum (home garden only)	Exempt	1	0.2% D EC	20-30 lb. D ½ oz.		

* May not give adequate control in the Southeast.

** 15 days if tops are not to be used for food or feed.

VEGETABLE INSECTS (continued)

VEGETABLE INSECTS (continued)							
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEET, TABLE (con.)							
Blister beetles	Carbaryl	12 tops 5 roots	14*	D or WP	1½ lb.	On beetles as needed.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT	7	--	D, EC, or WP	1½ lb.		
	Methoxychlor	14	14 tops 7 roots	D or WP	1½ lb.		
	Parathion	1	21**	D, EC, or WP	½ lb.		
Cutworms	DDT	7	--	D, EC, or WP	2 lb.	To soil as needed.	Do not use DDT-treated tops for food or feed. Do not repeat soil application of aldrin, chlordane, DDT, or dieldrin for at least 3 years.
Flea beetles	DDT	7	--	D, EC, or WP	1½ lb.	On foliage as needed.	
	Methoxychlor	14	14 tops 7 roots	5% D or WP	1½ lb.		
White-fringed beetles Grubs	Aldrin	0.25	--	EC, G, or WP	2 lb.	Broadcast on soil before planting and thoroughly work into upper 3 in.	
	Chlordane	0.3	--	EC, G, or WP	5 lb.		
	DDT	7	--	EC, G, or WP	10 lb.		
	Dieldrin	0.25	--	EC, G, or WP	1½ lb.		
Wireworms In West	Aldrin	0.25	--	EC or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in.	
	DDT	7	--	EC or WP	10 lb.		
	Dieldrin	0.25	--	EC or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
In Northeast	Aldrin	0.25	--	EC or WP	2-3 lb.	Apply DDT in fall or at least 6 weeks before planting.	
	Chlordane	0.3	--	EC or WP	6-8 lb.		
Continued on page 34							

Continued on page 34

* 3 days if tops are not to be used for food or feed.

** 15 days if tops are not to be used for food or feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BEET, TABLE (con.)							Do not use parathion in home garden; should be applied only by a trained operator.
Wireworms (con.) In Southeast	Chlordane *	0.3	--	EC, G, or WP	4-6 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in. with double-disk harrow.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT **	7	--	EC, G, or WP	20 lb.		
	Parathion	1	--	EC, G, or WP	3 lb.		Do not repeat application of chlordane or DDT for at least 3 years.
BROCCOLI							
Aphids	Demeton	0.75	21	EC	1/4-1/2 lb.	On foliage when aphids appear; repeat weekly as needed. For transplants add demeton to transplant water. See FB 2148, p. 14.	Do not use demeton, Di-Syston, Guthion, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Diazinon	0.75	7	D EC or WP	6-16 oz. 6-8 oz.		
	Guthion	2	15	D or EC	3/4 lb.		
	Malathion	8	3	D, EC, or WP	1 1/4 lb.		
	Mevinphos	1	3	D, EC, or WP	1/4-1/2 lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	7	D, EC, or WP	1/2 lb.		
	Di-Syston	0.75	14	G	1 lb.	Apply in furrow at planting time or as sidedressing after plant emergence.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 14 days after treatment.
Caterpillars	<u>Bacillus thuringiensis</u> ***	Exempt	--	3% aqueous suspension concentrate **** 25 billion spores/gm. WP	1 qt. concentrate 2 lb. WP	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear. Insecticides may not control cabbage looper under all conditions. Apply to both sides of leaves when larvae are small.	Do not apply Di-Syston more than once per season.
	Endosulfan *****	2	7	D or EC	3/4-1 lb.		
	Guthion	2	15	D or EC	3/4 lb.		

Continued on page 35

* Not effective against southern potato wireworm.

** For southern potato wireworm only.

*** Not effective against cabbage looper.

**** This is equivalent to 30 billion viable spores per gram of liquid concentrate.

***** May not give adequate control of the imported cabbageworm and fall armyworm in the Southeast.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BROCCOLI (con.)							
Caterpillars (con.)	Malathion (home garden only)	8	3	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plant- ings when insects appear. Insecticides may not control cabbage looper under all conditions. Apply to both sides of leaves when larvae are small.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator. Parathion is not effective at low temperatures. If maxi- mum daily temperatures below 70°F. persist after application, do not harvest for 14 days after treatment. Do not apply DDT or toxaphene after appearance of plant parts that are to be eaten or marketed.
	Mevinphos	1	3	D or EC	$\frac{1}{2}$ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	7	D, EC, or WP	$\frac{1}{2}$ lb.		
	Toxaphene	7	--	D or WP EC	3-4 lb. 2-3 lb. *		
	Toxaphene + parathion	7 + 1	--	D or WP EC	3-4 lb. + $\frac{1}{2}$ lb. 2-3 lb. * + $\frac{1}{2}$ lb.		
	Endosulfan + parathion	2 + 1	7	D or EC	$\frac{3}{4}$ lb. + $\frac{1}{2}$ lb.		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	Broadcast on soil as needed.	
	Toxaphene	7	--	D, EC, or WP	2 lb.		
				3% B	30 lb. B	Spread on soil (not plants) late in afternoon.	
Flea beetles	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage as needed.	
	Endosulfan	2	7	D, EC, or WP	$\frac{3}{4}$ lb.		
	Methoxychlor	14	14	D or WP	1 $\frac{1}{4}$ lb.		
	Rotenone	Exempt	1	D	$\frac{1}{4}$ lb.		
Harlequin bug and stink bug	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Endosulfan	2	7	D, EC, or WP	$\frac{3}{4}$ lb.		
	Naled	--	4	EC	1 $\frac{1}{2}$ lb.		

* More than 2 $\frac{1}{2}$ lb. per acre may cause plant injury if applied in low-gallonage emulsion sprays. Use at least 50 gallons of water per acre when parathion is added to toxaphene emulsion.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BROCCOLI (con.)							
Mole crickets	Chlordane	0.3	--	D, EC, G, or WP	1½-2 lb.	Broadcast on soil as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	To surface of seed bed before planting.	
Root maggots	Chlordane*	0.3	--	D, EC, or WP	1½ lb.	To soil at base of plants when leaves appear; repeat shortly after transplanting or thinning.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not apply chlordane to plants past seedling stage of growth. Do not apply DDT after appearance of plant parts that are to be eaten or marketed.
	Diazinon	0.75	7	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 3-4 in.	
	Chlordane	0.3	--	Drench: 1 lb. 40 or 50% WP/ 100 gal.	¾ cup drench/plant	On soil where each transplant is set.	
	Diazinon	0.75	7				
Vegetable weevil	DDT	7	--	D, EC, or WP	1¼ lb.	On foliage as needed.	Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
	Parathion	1	7	D, EC, or WP	½ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	¼ lb.		
Wireworms In West	Aldrin	0.25	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		

*Not effective in some areas. Emulsion may injure plants when soil is dry.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BRUSSELS SPROUTS							
Aphids	Demeton	0.75	21	EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.	On foliage when aphids appear; repeat weekly as needed. For transplants add demeton to transplant water. See FB 2148, p. 14.	Do not use demeton, Di-Syston, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Malathion	8	7	D, EC, or WP	$1\frac{1}{4}$ lb.		
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{2}$ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
	Di-Syston	0.75	30	G	1 lb.	Apply in furrow at planting time or as sidedressing after plant emergence.	Do not apply Di-Syston more than twice per season.
Caterpillars	Malathion (home garden only)	8	7	D, EC, or WP	$1\frac{1}{4}$ lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear. Insecticides may not control cabbage looper under all conditions. Apply to both sides of leaves when larvae are small.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 22 days after treatment.
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{2}$ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
	Toxaphene	7	--	D or WP EC	3-4 lb. 2-3 lb. *		
	Toxaphene + parathion	7 + 1	--	D or WP EC	3-4 lb. + $\frac{1}{2}$ lb. 2-3 lb. * + $\frac{1}{2}$ lb.		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	On soil as needed.	Do not apply DDT or toxaphene after appearance of plant parts to be eaten or marketed.
	Toxaphene	7	--	D, EC, or WP	2 lb.		
				3% B	30 lb. B		
Flea beetles	DDT	7	--	D, EC, or WP	$1\frac{1}{4}$ lb.	On foliage as needed.	
	Methoxychlor	14	14	D or WP	$1\frac{1}{4}$ lb.		

* More than $2\frac{1}{2}$ lb. per acre may cause plant injury if applied in low-gallage emulsion sprays. Use at least 50 gallons of water per acre when parathion is added to toxaphene emulsion.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BRUSSELS SPROUTS (con.)							
Harlequin bug and stink bug	DDT	7	--	D, EC, or WP	1½ lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Naled	--	4	EC	1½ lb.		
Root maggots	Chlordane*	0.3	--	D, EC, or WP	1½ lb.	To soil at base of plants when leaves first appear; repeat shortly after trans- planting or thinning.	After applying parathion to soil, keep all persons and animals off treated areas for 48 hours.
				Drench: 1½ lb. 40% WP or ½ pt. 75% EC/100 gal.	¾ cup drench/plant	On soil where each trans- plant is set.	Do not apply chlordane to plants past seedling stage.
Wireworms In West	Aldrin	0.25	--	EC or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. with double-disk harrow. Apply DDT in the fall or at least 6 weeks before planting. Soil temperature should be at least 50°F when para- thion is applied.	Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
	DDT	7	--	EC or WP	10 lb.		
	Dieldrin	0.25	--	EC or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
CABBAGE							
Aphids	Demeton	0.75	21	EC	¼-½ lb.	On foliage when aphids appear; repeat weekly as needed. For trans- plants add demeton to transplant water. See FB 2148, p. 14.	Do not use demeton or Guthion in home garden; should be applied only by a trained operator.
	Diazinon	0.75	7	D EC or WP	6-16 oz. 6-8 oz.		
	Guthion	2	21	D, EC, or WP	¾ lb.		

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* Not effective in some areas. Emulsion may injure plants when soil is dry.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CABBAGE (con.)							
Aphids (con.)	Malathion	8	7	D, EC, or WP	1-1¼ lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use Di-Syston, Guthion, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Mevinphos	1	1	D, EC, or WP	¼-½ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	10	D, EC, or WP	0.4-0.5 lb.		
	Di-Syston	0.75	42	G	1 lb.	In furrow at planting or as sidedressing after plants emerge.	
Caterpillars	<u>Bacillus thuringiensis</u> *	Exempt	--	3 % aqueous suspension concentrate** 25 billion spores/gm. WP	1 qt. concentrate 2 lb. WP	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear. These insecticides may not give adequate control of the cabbage looper under some conditions. For looper control apply on both sides of the leaves before larvae become large.	Do not apply toxaphene after heads begin to form. Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 17 days after treatment.
	Endosulfan***	2	7	D or EC	1 lb.		
	Guthion	2	21	D or EC	¾ lb.		
	Malathion (home garden only)	8	7	D, EC, or WP	1¼ lb.		
	Mevinphos	1	1	D, EC, or WP	½ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	10	D, EC, or WP	½ lb.		
	Toxaphene	7	--	D or WP EC	3-4 lb. 2-3 lb. ****		

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Continued on page 40

* Not effective against cabbage looper.

** This is equivalent to 30 billion viable spores per gram of liquid concentrate.

*** May not give adequate control of the imported cabbageworm and fall armyworm in the Southeast.

**** More than 2½ lb. per acre may cause plant injury if applied in low-gallonage emulsion sprays.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CABBAGE (con.)							
Caterpillars (con.)	Toxaphene + parathion	7 + 1	--	D or WP EC	3-4 lb. + $\frac{1}{2}$ lb. 2-3 lb. * + $\frac{1}{2}$ lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear.	Do not use parathion in home garden; should be applied only by a trained operator. Do not apply DDT or toxa- phene after heads begin to form.
	Toxaphene + DDT (Southwest only)	7	--	D, EC, or WP	3 lb. * + 1 lb.		
	Endosulfan + parathion	2 + 1	10	D or EC	$\frac{3}{4}$ lb. + $\frac{1}{2}$ lb.		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	Broadcast on soil surface.	
	Toxaphene	7	--	D, EC, or WP	2 lb.		
				3% B	30 lb. B	Spread on soil (not plants) in late afternoon.	
Flea beetles	DDT	7	--	D, EC, or WP	$1\frac{1}{4}$ lb.	On foliage as needed.	
	Endosulfan	2	7	D or EC	$\frac{3}{4}$ lb.		
	Methoxychlor	14	3	D or WP	$1\frac{1}{4}$ lb.		
	Naled	--	4	EC	$1\frac{1}{2}$ lb.		
Harlequin bug and stink bug	DDT	7	--	D, EC, or WP	$1\frac{1}{4}$ lb.		
	Endosulfan	2	7	D, EC, or WP	$\frac{3}{4}$ lb.		
	Naled	--	4	EC	$1\frac{1}{2}$ lb.		

*More than $2\frac{1}{2}$ lb. per acre may cause plant injury if applied in low-gallonage emulsion sprays. Use at least 50 gallons of water per acre when parathion is added to toxaphene emulsion

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CABBAGE (con.)	Chlordane	0.3	--	D, EC, G, or WP	1½-2 lb.	Broadcast on soil surface.	Do not use parathion in home garden; should be applied only by a trained operator.
Mole crickets				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	Broadcast on surface of seed bed before planting.	
Root maggots	Chlordane*	0.3	--	D, EC, or WP	1½ lb.	To soil at base of plants when leaves appear; repeat shortly after transplanting or thinning.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after foliage application, do not harvest for 17 days after treatment. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Diazinon	0.75	--	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 3-4 in.	
	Chlordane	0.3	--	Drench: 1½ lb. 40 or 50% WP/ 100 gal.	¾ cup drench/ plant	To soil where each transplant is set.	
	Diazinon	0.75	--				
Vegetable weevil	DDT	7	--	D, EC, or WP	1¼ lb.	On foliage as needed.	Do not apply chlordane to plants past seedling stage or DDT after heads begin to form. Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
	Parathion	1	10	D, EC, or WP	½ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	¼ lb.		
Wireworms In West	Aldrin	0.25	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT in fall or at least 6 weeks before planting.	
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	

* Not effective in some areas. Emulsion may injure plants when soil is dry.

VEGETABLE INSECTS (continued)

VEGETABLE INSECTS (continued)									
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS		
CANTALOUPE									
Aphids	Diazinon	0.75	3	D EC or WP	$\frac{3}{4}$ -1 lb. $\frac{3}{4}$ lb.	On foliage as needed.	Do not use carbophenothion, mevinphos, or parathion in home garden; should be applied only by a trained operator. Do not apply parathion before vining.		
	Endosulfan	2	1	D EC or WP	1 lb. $\frac{1}{2}$ lb.				
	Malathion	8	1	D or EC	1 $\frac{3}{4}$ lb.				
	Mevinphos	0.5	1	D or EC	$\frac{1}{2}$ lb.				
	Parathion	1	7	D or EC	1/3-1/2 lb.				
Beet leafhopper	Parathion	1	7	D or EC	$\frac{1}{2}$ lb.				
Cucumber beetles	Malathion	8	1	D or EC	1 $\frac{3}{4}$ lb.				
	Methoxychlor	14	1	D or WP	1 $\frac{3}{4}$ lb.				
	Parathion	1	7	D or EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.				
Leafhoppers (southern garden and western potato)	Malathion	8	1	D or EC	1 $\frac{3}{4}$ lb.				
	Parathion	1	7	D or EC	1/3-1/2 lb.				
Leaf miners and thrips	Parathion	1	7	D or EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.				
Pickleworm	Carbaryl	10	1	D or WP	1 lb.	On foliage when worms appear in blossoms; repeat weekly as needed.	Do not use lindane in this manner in fields to be planted within 2 years to potato or other root crops, or peanuts, as it may adversely affect their flavor.		
	Lindane*	10	1	1% D 25% WP	20-35 lb. D 1 lb. WP				
Spider mites	Carbophenothion	0.8	5	D, EC, or WP	1 lb.	On foliage as needed.			
	Kelthane	5	2	EC D	$\frac{1}{2}$ lb. 1 lb.				
	Parathion	1	7	D or EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.				
	Tetradifon	1	1	D EC or WP	1 lb. $\frac{1}{2}$ lb.				

* When used with zineb or maneb every 5 days, reduce dosage of lindane by one-half.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CANTALOUPE (con.)							
Wireworms	Chlordane (in East)	0.3	--	EC or WP	4-8 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. with double-disk harrow. Apply DDT in fall or at least 6 weeks before planting. Soil temperature should be at least 50°F. when diazinon or parathion is applied.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat application of chlordane, DDT, or dieldrin for at least 3 years.
	DDT (in West)	7	--	EC or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0	--	EC or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide (in West)	75 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. deep into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
CARROT							
Carrot rust fly	Diazinon	0.75	--	G	2 lb.	To seed furrow at planting time.	Do not apply after planting.
Leafhoppers	Carbaryl	10	1	D or WP	1-2 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator. Do not use DDT-treated tops for food or feed.
	DDT	7	--	D, EC, or WP	1¼ lb.		
	Malathion	8	7	D, EC, or WP	1½ lb.		
	Methoxychlor	14	14 tops 7 roots	D or WP	1¼ lb.		
Vegetable weevil	DDT	7	--	D, EC, or WP	1¼ lb.		
	Parathion	1	15	D, EC, or WP	½ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	¼ lb.		

VEGETABLE INSECTS (continued)

VEGETABLE INSECTS (continued)							
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CARROT (con.)							
Wireworms In West	DDT	7	--	EC or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT in fall or at least 6 weeks before planting. Soil temperature should be at least 50°F. when diazinon or parathion is applied.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat application of DDT to the soil for at least 3 years.
	Diazinon	0.75	--	G	3 lb.		
	Parathion	1	--	G	4 lb.		
In Southeast	DDT*	7	--	EC, G, or WP	20 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in. with double-disk harrow. Apply DDT in fall or at least 6 weeks before planting.	
	Diazinon	0.75	--	EC or WP	2 lb.		
	Parathion	1	--	EC or WP	3 lb.		
CAULIFLOWER							
Aphids	Demeton	0.75	21	EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.	On foliage when aphids appear; repeat weekly as needed. For trans- plants add demeton to transplant water. See FB 2148, p. 14.	Do not use demeton, Di- Syston, Guthion, mevinphos, or parathion in home garden; should be applied only by a trained operator. Parathion is not effective at low temperatures. If maxi- mum daily temperatures below 70°F. persist after application, do not harvest for 14 days after treatment.
	Diazinon	0.75	5	D EC or WP	6-16 oz. 6-8 oz.		
	Guthion	2	15	D or EC	$\frac{3}{4}$ lb.		
	Malathion	8	7	D, EC, or WP	$1\frac{1}{4}$ lb.		
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	7	D, EC, or WP	$\frac{1}{2}$ lb.		
	Di-Syston	0.75	40	G	1 lb.	Apply in furrow at plant- ing time or as sidedress- ing after plant emergence.	Do not apply Di-Syston more than twice per season.

* For southern potato wireworm only.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CAULIFLOWER (con.)							
Caterpillars	<u>Bacillus thuringiensis</u> *	Exempt	--	3% aqueous suspension concentrate ** 25 billion spores/ gm. WP	1 qt. concentrate 2 lb. WP	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear.	Do not use Guthion, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Endosulfan***	--	--	D or EC	$\frac{3}{4}$ lb.		
	Guthion	2	15	D or EC	$\frac{3}{4}$ lb.	Insecticides may not control cabbage looper under all conditions. Apply to both sides of leaves when larvae are small.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70°F. persist after application, do not harvest for 14 days after treatment.
	Malathion (home garden only)	8	7	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{2}$ lb.		
	Naled	--	4	D or EC	1-2 lb.		Do not apply toxaphene after the curd begins to form.
	Parathion	1	7	D, EC, or WP	$\frac{1}{2}$ lb.		
	Toxaphene	7	--	D or WP EC	3-4 lb. 2-3 lb. ****		Do not apply endosulfan after appearance of plant parts to be eaten or marketed.
	Toxaphene + DDT (Southwest only)	7	--	D, EC, or WP	3 lb. **** + 1 lb.		
	Toxaphene + parathion	7 + 1	--	D or WP EC	3-4 lb. + $\frac{1}{2}$ lb. 2-3 lb. **** + $\frac{1}{2}$ lb.		
	Endosulfan + parathion	1 parathion only	--	D or EC	$\frac{3}{4}$ lb. + $\frac{1}{2}$ lb.		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	Broadcast on soil as needed.	Do not apply DDT or toxaphene after the curd begins to form.
	Toxaphene	7	--	D, EC, or WP	2 lb.		
				3% B (home garden only)	30 lb. B	Spread on soil (not plants) late in afternoon.	

* Not effective against cabbage looper.

** This is equivalent to 30 billion viable spores per gram of liquid concentrate.

*** May not give adequate control of the imported cabbageworm and fall armyworm in the Southeast.

**** More than 2 $\frac{1}{2}$ lb. per acre may cause plant injury if applied in low-gallonage emulsion sprays. Use at least 50 gallons of water per acre when parathion is added to toxaphene emulsion.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CAULIFLOWER (con.)							
Flea beetles	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator. Do not apply endosulfan after appearance of plant parts to be eaten or marketed.
	Endosulfan	--	--	D, EC, or WP	$\frac{3}{4}$ lb.		
	Methoxychlor	14	7	D or WP	1 $\frac{1}{4}$ lb.		
	Rotenone	Exempt	1	D	$\frac{1}{4}$ lb.		
Harlequin bug and stink bug	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Endosulfan	--	--	D or EC	$\frac{3}{4}$ lb.		
	Naled	--	4	EC	1 $\frac{1}{2}$ lb.		
Mole crickets	Chlordane	0.3	--	D, EC, or WP	1 $\frac{1}{2}$ -2 lb.	Broadcast on soil as needed.	Do not apply chlordane if plants are past seedling stage.
				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	To surface of seed bed before planting.	
Root maggots	Chlordane*	0.3	--	D, EC, or WP	1 $\frac{1}{2}$ lb.	To soil at base of plants when leaves appear; repeat shortly after transplanting or thinning.	
	Diazinon	0.75	5	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 3-4 in.	
	Chlordane*	0.3	--	Drench: 1 $\frac{1}{2}$ lb. 40 or 50% WP/ 100 gal.	$\frac{3}{4}$ cup drench/plant	On soil where each transplant is set.	
	Diazinon	0.75	5				
Vegetable weevil	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage as needed.	Do not apply DDT after curd begins to form.
	Parathion	1	7	D, EC, or WP	$\frac{1}{2}$ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	$\frac{1}{4}$ lb.		

* Not effective in some areas. Emulsion may injure plants when soil is dry.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CAULIFLOWER (con.)							
Wireworms In West	Aldrin	0.25	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT in fall or at least 6 weeks before planting.	Do not use parathion in home garden; should be applied only by a trained operator.
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide	10 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
CELERY							
Aphids	Demeton	0.75	28	EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.	On foliage as needed.	Do not use demeton, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Diazinon	0.75	7	EC or WP	6-8 oz.		
	Malathion	8	7	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		
	Parathion	1	21	D, EC, or WP	$\frac{1}{2}$ lb.		
Celery leaf tier	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.	2 applications $\frac{1}{2}$ hour apart.	Do not apply DDT after bunch begins to form or stalk is half grown, whichever is earlier.
	Parathion	1	21	D	$\frac{1}{2}$ lb.		
	Pyrethrum	Exempt	1	0.2% D EC	20-30 lb. D $\frac{1}{2}$ oz.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CELERY (con.)							
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	Broadcast on soil as needed.	Do not use demeton or para- thion in home garden; should be applied only by a trained operator.
	Toxaphene	7	--	D	2 lb.		
Lygus bugs	DDT	7	--	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage as needed.	Do not apply DDT or toxa- phene after bunch begins to form or stalk is half grown, whichever is earlier.
	Pyrethrum	Exempt	1	0.2% D EC	20-30 lb. D $\frac{1}{2}$ oz.		
Spider mites	Demeton	0.75	28	EC	$\frac{1}{4}$ lb.	Broadcast on soil and thoroughly work into upper 6-9 in. before planting.	Parathion is not effective at low temperatures.
	Malathion	8	7	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Parathion	1	21	D, EC, or WP	$\frac{1}{2}$ lb.		
Wireworms In West	DDT	7	--	EC or WP	10 lb.	Soil temperature should be at least 50°F. when diazinon or parathion is applied.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Diazinon	0.75	--	G	3 lb.		
	Parathion	1	--	G	4 lb.		
CHARD (See Swiss chard)							
COLLARD							
Aphids	Diazinon	0.75	10	D EC or WP	6-16 oz. 6-8 oz.	On foliage when aphids appear; repeat weekly as needed.	Do not use mevinphos or para- thion in home garden; should be applied only by a trained operator.
	Malathion	8	7	D, EC, or WP	1 $\frac{1}{4}$ lb.		
	Mevinphos	1	3	D, EC, or WP	$\frac{1}{2}$ lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
COLLARD (con.)							
Caterpillars	Malathion (home garden only)	8	7	D, EC, or WP	1¼ lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.
	Mevinphos	1	3	D, EC, or WP	½ lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	15	D, EC, or WP	½ lb.		
	Toxaphene	7	35*	EC D or WP	2-3 lb. 3-4 lb.		
	Toxaphene + parathion	7 + 1	35*	D or WP	3-4 lb. + ½ lb. 2-3 lb.** + ½ lb.		
Cutworms (soil)	DDT	7	21***	D, EC, or WP	2 lb.	On soil as needed.	
	Toxaphene	7	35*	D, EC, or WP	2 lb.	Spread on soil (not plants) late in afternoon.	
				3% B	30 lb. B		
Flea beetles	DDT	7	21***	D, EC, or WP	1¼ lb.	On foliage as needed.	
	Methoxychlor	14	14	D or WP	1¼ lb.		
Harlequin bug and stink bug	DDT	7	21***	D, EC, or WP	1¼ lb.		
	Naled	--	4	EC	1¼ lb.		
Mole crickets	Chlordane	0.3	--	D, EC, G, or WP	1½-2 lb.	Broadcast on soil of infested field.	Do not apply chlordane after thinning or transplanting.
				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	To surface of seed bed before planting.	

* 21 days if applied as a dust.

** More than 2½ lb. per acre may cause plant injury if applied in low-gallonage emulsion spray. Use at least 50 gallons of water per acre when parathion is added to toxaphene emulsion.

*** On plants intended for processing only; on others do not apply past seedling stage.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
COLLARD (con.)							
Vegetable weevil	DDT	7	21*	D, EC, or WP	1 $\frac{1}{4}$ lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	$\frac{1}{4}$ lb.		
CORN (See Sweet corn)							
COWPEA (See Pea, blackeye)							
CUCUMBER, OUT - DOOR							
Aphids	Diazinon	0.75	7	D EC or WP	0.8-1 lb. $\frac{1}{2}$ lb.	On foliage as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator. Do not apply parathion before vining.
	Endosulfan	2	1	D, EC, or WP	$\frac{1}{2}$ -1 lb.		
	Malathion (home garden only)	8	1	D, EC, or WP	1 $\frac{3}{4}$ lb.		
	Mevinphos	0.25	1	D, EC, or WP	$\frac{1}{2}$ lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		
Cucumber beetles	Carbaryl	10	1	D or WP	1 lb.		
	Endosulfan	2	1	D, EC, or WP	$\frac{1}{2}$ -1 lb.		
	Malathion	8	1	D, EC, or WP	1 $\frac{3}{4}$ lb.		
	Methoxychlor	14	1	D or WP	1-2 lb.		
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		

* On plants intended for processing only; on others do not apply past seedling stage.

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VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CUCUMBER, OUT- DOOR (con.)							
Cutworms	Endrin	0	14	D, EC, or WP	$\frac{1}{4}$ lb.	On soil surface and foliage.	Do not use endrin or parathion in home garden; should be applied only by a trained operator.
Leaf miners	Diazinon	0.75	7	D EC or WP	0.8-1 lb. $\frac{1}{2}$ lb.	On foliage as needed.	
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
Pickleworm	Carbaryl*	10	1	D or WP	1 lb.	On foliage when worms appear in blossoms; repeat every week.	Do not use lindane in this manner in fields to be planted within 2 years to potato or other root crops, or peanuts, as it may adversely affect their flavor.
	Lindane*	10	1	1% D 25% WP 20% EC	20-35 lb. D 1 lb. WP 1 pt. EC		
Spider mites	Kelthane	5	2	EC or WP D	10 oz. 1 lb.	On foliage as needed.	Do not apply parathion before vining.
	Malathion	8	1	5% D 25% WP 57% EC	20-35 lb. D 6 lb. WP $1\frac{1}{2}$ pt. EC		
	Parathion	1	15	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		
Thrips	Parathion	1	15	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb.		
Wireworms	Aldrin	0.25	--	EC, G, or WP	5 lb. (in West) 3 lb. (in East)	Broadcast on soil before planting and thoroughly work into upper 6-9 in.	Do not repeat application of aldrin, chlordane, or dieldrin for at least 3 years.
	Chlordane	0.3	--	EC, G, or WP	4-8 lb. (in East)		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Ethylene dibromide (in West)	30 (inorganic bromide)	--	83% soln. (12 lb. per gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.

* When used with zineb or maneb every 5 days, reduce dosage of lindane or carbaryl by one-half.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CUCUMBER, LARGE GREENHOUSE*							
Aphids	Malathion	8	1	10% aerosol	1 lb. aerosol per 50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85° F. and ventilators closed for at least 2 hours.	Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
	Parathion	1	15	10% aerosol			
	Tepp	0	3	5% aerosol			
Armyworms, cabbage looper, earwigs, and thrips	DDT	7	5	3% D	20 lb. D	Dust into air above plants.	Do not apply parathion before vining.
	Malathion	8	1	10% aerosol	1 lb. aerosol per 50,000 cu. ft.	Same as for Aphids.	
	Parathion	1	15				
Cucumber beetles	DDT	7	5	3% D	20 lb. D	Same as for Armyworms.	
	Parathion	1	15	10% aerosol	1 lb. aerosol per 50,000 cu. ft.	Same as for Aphids.	
Cutworms	DDT	7	5	3% D	20 lb. D	On soil surface.	
Garden symphytan	Lindane	10	--	Drench: 5 oz. 25% WP/50 gal.	50 gal./1,000 sq.ft.	Sprinkle on soil before watering. Put 1 pt. around base of each newly set plant.	Use lindane only in greenhouse.
Greenhouse whitefly, mealybugs, and spider mites	Malathion	8	1	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85° F. and ventilators closed for at least 2 hours.	
	Parathion	1	15	10% aerosol			
	Tepp	0	3	5% aerosol			

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CUCUMBER, LARGE GREENHOUSE* (con.)							
Mushroom mite	Parathion	1	15	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	In closed greenhouse in air above plants.	Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
	Tepp	0	3	5% aerosol		Temperature should be 70-85°F. and ventilators closed for at least 2 hours.	
Thrips	Malathion	8	1	10% aerosol			
	Parathion	1	15	10% aerosol			
	DDT	7	5	3% D	20 lb. D	Dust into air above plants.	Do not apply parathion before vining.
CUCUMBER, SMALL GREENHOUSE**							
Aphids	Malathion	8	1	EC	2 tsp. EC/gal.	On foliage as needed.	
Caterpillars and ear- wigs	DDT	7	5	3% D	½ lb. D/1,000 sq. ft.	Dust into air above plants.	
	Malathion	8	1	EC	2 tsp. EC/gal.	On foliage as needed.	
Cucumber beetles	DDT	7	5	3% D	½ lb. D/1,000 sq. ft.	Dust into air above plants.	
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/gal.	On foliage as needed.	
Cutworms	DDT	7	5	3% D	½ lb. D/1,000 sq. ft.	On soil as needed.	
Garden symphytan	Lindane	10	--	Drench: 5 oz. 25% WP/50 gal.	50 gal. /1,000 sq. ft.	Sprinkle on soil before watering. Put 1 pt. around base of each newly set plant.	Use lindane only in greenhouse.
Greenhouse whitefly	Malathion	8	1	EC	2 tsp. EC/gal.	On foliage as needed.	
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/gal.		
Mealybugs	Malathion	8	1	EC	2 tsp. EC/gal.		

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

** Any greenhouse less than 20,000 cu. ft. or attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
CUCUMBER, SMALL GREENHOUSE* (con.)								
Spider mites	Kelthane	5	2	WP	1 tbsp. WP/gal.	On foliage as needed.		
	Malathion	8	1	EC	2 tsp. EC/gal.			
Thrips and garden flea hopper	DDT	7	5	3% D	$\frac{1}{2}$ lb. D/1,000 sq. ft.	Dust into air above plants.		
	Malathion	8	1	EC	2 tsp. EC/gal.	On foliage as needed.		
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/gal.			
EGGPLANT	Endosulfan	2	1	D, EC, or WP	$\frac{1}{2}$ lb.	On foliage as needed.		Do not use parathion in home garden; should be applied only by a trained operator.
Aphids	Malathion	8	3	D, EC, or WP	$1\frac{3}{4}$ lb.			
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.			
Colorado potato beetle	Carbaryl	10	1	D or WP	1-2 lb.			
	DDT	7	5	D, EC, or WP	$1\frac{1}{4}$ lb.			
	Endosulfan	2	1	D or EC	$\frac{1}{2}$ lb.			
	Naled	--	4	EC	$1\frac{1}{2}$ lb.			
Cutworms	DDT	7	5	D, EC, or WP	2 lb.	On soil as needed.		
	Toxaphene	7	5	D, EC, or WP	2 lb.			
				3% B	40 lb. B	Scatter on soil (not plants) late in afternoon.		
Eggplant lace bug	Malathion	8	3	D, EC, or WP	$1\frac{1}{4}$ lb.	On foliage as needed.		
Flea beetles	Carbaryl	10	1	D or WP	1-2 lb.			
	DDT	7	5	D, EC, or WP	$1\frac{1}{4}$ lb.			
	Endosulfan	2	1	D or EC	$\frac{1}{2}$ lb.			
	Methoxychlor	14	1	D or WP	$1\frac{1}{2}$ lb.			

* Any greenhouse less than 20,000 cu. ft. or attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
EGGPLANT (con.)							
Hornworms	Carbaryl	10	1	D or WP	1-2 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat soil application of chlordane, DDT, or dieldrin for at least 3 years.
	TDE	7	1	D, EC, or WP	2-3 lb.		
Spider mites	Kelthane	5	2	D EC or WP	1 lb. 0.8 lb.		
	Malathion	8	3	D, EC, or WP	1 $\frac{1}{4}$ lb.		
Whiteflies	Endosulfan	2	1	D or EC	$\frac{1}{2}$ lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT in fall or at least 6 weeks before planting. Soil temperature should be at least 50°F. when parathion is applied.	
	Parathion	1	15	D, EC, or WP	0.45 lb.		
Wireworms	Chlordane (in East)	0.3	--	EC, G, or WP	4-8 lb.		
	DDT (only on irrigated lands in West)	7	--	EC, G, or WP	10 lb.		
	Dieldrin	0.1	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide (in West)	50 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
HOP							
Aphids	Demeton	1.25	21	EC	$\frac{1}{2}$ lb.	On foliage as needed; about July 1.	Demeton or parathion should be applied only by a trained operator. Do not make more than 2 applications of tetradifon. Do not feed straw from tetradifon-treated fields to livestock.
	Diazinon	0.75	14	D, EC, or WP	1 lb.		
	Parathion	1	15	D or EC	$\frac{1}{2}$ lb.		
Spider mites	Demeton	1.25	21	EC	$\frac{1}{2}$ lb.		
	Diazinon	0.75	14	D, EC, or WP	1 lb.		
	Kelthane	30	7	D EC	1 $\frac{1}{2}$ lb. 1.2 lb.		
	Tetradifon	30 fresh hops 120 dried hops	14	D, EC, or WP	1 lb.		

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VEGETABLE INSECTS (continued)

VEGETABLE INSECTS (continued)								
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
HOP (con.)	Parathion Tepp	1	15	D or EC	$\frac{1}{2}$ lb.	On foliage as needed.	Parathion or tepp should be applied only by a trained operator.	
Spider mites (con.)		0	3	EC	$\frac{1}{2}$ lb.			
Wireworms	Aldrin	--	--	EC, G, or WP	5 lb.	Broadcast on soil and thoroughly work into upper 6-9 in.	Do not apply after planting or after growth starts in spring. Do not repeat application of aldrin or DDT for at least 3 years.	
	DDT	--	--	EC, G, or WP	10 lb.			
KALE	Diazinon Malathion Mevinphos Parathion	0.75	10	D EC or WP	6-16 oz. 6-8 oz.	On foliage when aphids appear; repeat weekly as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator. Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 21 days after treatment.	
Aphids		8	7	D, EC, or WP	1-1 $\frac{1}{4}$ lb.			
		1	3	D or EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb.			
		1	15	D, EC, or WP	0.4-0.5 lb.			
		Caterpillars	Malathion (home garden only)	8	7			D, EC, or WP
Mevinphos	1		3	D or EC	$\frac{1}{2}$ lb.			
Naled	--		4	D or EC	1-2 lb.			
Parathion	1		15	D, EC, or WP	$\frac{1}{2}$ lb.			
Toxaphene	7		35*	D or WP EC	3-4 lb. 2-3 lb.			
Cutworms (soil)	DDT	7	21**	D, EC, or WP	2 lb.	On soil as needed.		
	Toxaphene	7	35*	D, EC, or WP	2 lb.			
				3% B	30 lb. B	Spread on soil (not plants) in late afternoon.		

* 21 days if applied as a dust.

** On plants intended for processing only; on others do not apply after seedling stage.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
KALE (con.)							
Flea beetles	DDT	7	21*	D, EC, or WP	1¼ lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Methoxychlor	14	14	D or WP	1¼ lb.		
Harlequin bug and stink bug	DDT	7	21*	D, EC, or WP	1¼ lb.		
	Naled	--	4	EC	1½ lb.		
Mole crickets	Chlordane	0.3	--	D, EC, G, or WP	1½-2 lb.	Broadcast on soil of infested field.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70°F. persist after application, do not harvest for 22 days after treatment.
				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	To surface of seed bed before planting.	
Root maggots	Chlordane**	0.3	--	D, EC, or WP	1½ lb.	To soil at base of plants when leaves appear; repeat shortly after transplanting or thinning.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat soil application of DDT for at least 3 years.
				Drench: 1 lb. 40% WP/100 gal.	¾ cup drench/plant	On soil where each transplant is set.	
Vegetable weevil	DDT	7	21*	D, EC, or WP	1¼ lb.	On foliage as needed.	
	Parathion	1	15	D, EC, or WP	½ lb.		
	Rotenone (home garden only)	Exempt	1	D, EC, or powder	¼ lb.		
Wireworms In West	DDT	7	--	EC, G, or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting. Soil temperature should be at least 50°F. when diazinon or parathion is applied.	
	Diazinon	0.75	--	G	3 lb.		
	Parathion	1	--	G	4 lb.		

*On plants intended for processing only; on others do not apply after seedling stage.

** Not effective in some areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
KOHLRABI							
Aphids	Malathion	8	7	D, EC, or WP	1-1½ lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use parathion or tepp in home garden; should be applied only by a trained operator. Do not apply DDT or toxaphene after appearance of plant parts to be eaten or marketed. Parathion is not effective at low temperatures. If maximum daily temperatures below 70°F. persist after application, do not harvest for 14 days after treatment.
	Parathion	1	7	D, EC, or WP	½ lb.		
	Tepp	0	3	D or EC	¼-½ lb.		
Caterpillars	Malathion (home garden only)	8	7	D, EC, or WP	1¼ lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on other plantings when insects appear.	
	Parathion	1	7	D, EC, or WP	½ lb.		
	Toxaphene	7	30	D or WP EC	3-4 lb. 2-3 lb. *		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	On soil as needed.	
	Toxaphene	7	30	D, EC, or WP	2 lb.		
				3% B	30 lb. B	Spread on soil (not plants) in late afternoon.	
Flea beetles	DDT	7	--	D, EC, or WP	1¼ lb.	On foliage as needed.	
	Methoxychlor	14	1	D or WP	1¼ lb.		
Harlequin bug and stink bug	DDT	7	--	D, EC, or WP	1¼ lb.		
Root maggots	Chlordane**	0.3	--	D, EC, or WP	1½ lb.	To soil at base of plants when leaves appear; repeat shortly after transplanting or thinning.	Do not apply to plants past seedling stage.
				Drench: 1½ lb. 40% WP/100 gal.	¾ cup drench/plant	On soil where each transplant is set.	

* More than 2½ lb. per acre may cause plant injury if applied in low-gallonage sprays.

** Not effective in some areas. Emulsion may injure plants when soil is dry.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
LETTUCE, OUTDOOR							
Aphids	Demeton	0.75	21	EC	1/4-1/2 lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use demeton, mevinphos, parathion, or tepp in home garden; should be applied only by a trained operator.
	Diazinon	0.75	10	D, EC, or WP	6-8 oz.		
	Endosulfan (head lettuce only)	2	14	D or EC	1 lb.		
	Malathion	8	14*	D, EC, or WP	1-2 lb.		
	Mevinphos	0.5	3	D, EC, or WP	1/2 lb.		
	Parathion	1	21**	D, EC, or WP	1/2 lb.		
	Tepp	0	3	D or EC	1/4-1/2 lb.		
Caterpillars	Endosulfan (head lettuce only)	2	14	D or EC	1 lb.	On foliage as needed.	Do not apply DDT or toxaphene to head lettuce after heads begin to form, or to leaf lettuce after appearance of leaves that are to be eaten or marketed.
	Malathion (home garden only)	8	14*	D, EC, or WP	1 1/4 lb.		
	Mevinphos	0.5	3	D or EC	1/2 lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	21**	D, EC, or WP	1/2 lb.		
	Toxaphene	7	--	D or WP EC	4 lb. 2 1/2 lb.		
	Toxaphene + DDT (Southwest only)	7	--	D or EC	3 lb. + 1 lb.		
	Toxaphene + parathion	7 + 1	--	D or WP	4 lb. + 0.4 lb.		
Corn earworm	DDT	7	--	D, EC, or WP	1-2 lb.		Parathion is not effective at low temperatures.

* 7 days on head lettuce.

** 15 days on head lettuce when maximum temperatures are above 70° F.

VEGETABLE INSECTS (continued)

VEGETABLE INSECTS (continued)							
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
LETTUCE, OUTDOOR (con.)	DDT Toxaphene	7	--	D, EC, or WP	2 lb.	On soil as needed.	Do not apply DDT or toxaphene to head lettuce after heads begin to form, or to leaf lettuce after appearance of leaves that are to be eaten or marketed.
Cutworms (soil)		7	--	D, EC, or WP	2 lb.		
					3% B	30 lb. B	
Grasshoppers and field crickets	Dieldrin	0.25	--	D, EC, or WP	$\frac{1}{2}$ lb.	On seedlings as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Toxaphene	7	--	D, EC, or WP	$2\frac{1}{2}$ -4 lb. *		
Leafhoppers	Carbaryl	10	14**	D or WP	2 lb.	On foliage as needed.	Do not apply chlordane or dieldrin to plants past seedling stage. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT	7	--	D, EC, or WP	$1\frac{1}{4}$ - $2\frac{1}{2}$ lb.		
	Malathion	8	14***	D, EC, or WP	$1\frac{1}{4}$ lb.		
	Methoxychlor	14	14	D or WP	$1\frac{1}{4}$ lb.		
Mole crickets	Chlordane	0.3	--	D, EC, G, or WP	$1\frac{1}{2}$ -2 lb.	On soil as needed.	Do not repeat soil application of aldrin, chlordane, DDT, or dieldrin for at least 3 years.
				Drench: 4 oz. 40% WP/100 gal.	100 gal. drench/ 1,000 sq. ft.	To surface on seed bed before planting.	
Wireworms In Southeast	DDT****	7	--	EC, G, or WP	20 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in. with double-disk harrow.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.
	Diazinon	0.75	--	EC or WP	2 lb.		
	Parathion	1	--	EC or WP	3 lb.		
In Northeast	Aldrin	0.25	--	EC, G, or WP	3 lb.	Broadcast on soil and thoroughly work into upper 6-9 in. before planting.	
	Chlordane	0.3	--	EC, G, or WP	4-8 lb.		
Continued on page 61	Dieldrin	0.25	--	EC, G, or WP	3 lb.		

* In Southeast more than $2\frac{1}{2}$ lb. may cause injury if applied in low-pressure emulsions.

** 3 days on head lettuce.

*** 7 days on head lettuce.

**** For southern potato wireworm only.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
LETTUCE, OUTDOOR (con.)							
Wireworms (con.) In West	Aldrin	0.25	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting. Soil temperature should be at least 50°F. when diazinon or parathion is applied.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat application of aldrin, DDT, or dieldrin for at least 3 years.
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide (in West)	30 (inorganic bromide)	--	83% soln. (12 lb./ gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
LETTUCE, LARGE GREENHOUSE*							
Aphids	Malathion	8	10	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85°F. and ventilators closed for at least 2 hours.	Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
	Parathion	1	21	10% aerosol			
	Tepp	0	3	5% aerosol			
Armyworms and cabbage looper	DDT	7	--	3% D	20 lb. D	Dust into air above plants.	Do not apply DDT after appearance of leaves to be eaten or marketed.
	Malathion	8	10	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	Same as for Aphids.	
	Parathion	1	21	10% aerosol			
Cutworms (soil)	DDT	7	--	3% D	20 lb. D	To soil surface.	

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
LETTUCE, LARGE GREENHOUSE* (con.)							Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
Greenhouse whitefly	Malathion	8	10	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	Same as for Aphids.	
	Parathion	1	21	10% aerosol			
	Tepp	0	3	5% aerosol			
Sowbugs	DDT	7	--	3% D	--	To soil surface.	
	Parathion	1	21	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	Same as for Aphids.	
LETTUCE, SMALL GREENHOUSE**							Do not apply DDT after appearance of leaves to be eaten or marketed.
Aphids	Malathion	8	14	EC	2 tsp. EC/gal.	On foliage as needed.	
Caterpillars	DDT	7	--	3% D	--	Dust into air above plants.	
	Malathion	8	14	EC or WP	2 tsp. EC/gal.	On foliage as needed.	
Cutworms	DDT	7	--	10% D	--	To soil surface.	
Greenhouse whitefly	Malathion	8	14	EC	2 tsp. EC/gal.	On foliage, 4 applications 7 days apart.	
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/ gal.		
Sowbugs	DDT	7	--	3% D	--	To soil surface.	
MELONS (See Cantaloup and Watermelon)							

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

** Any greenhouse less than 20,000 cu. ft. or that is attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
MINT							
Aphids	Malathion	8	7	D or EC	1 lb.	On foliage as needed.	Do not use D-D, parathion, Telone, or tepp in home garden; should be applied only by a trained operator.
	Tepp	0	3	D EC	1 lb. 0.4 lb.		
Caterpillars	Malathion	8	7	D or EC	1 lb.		
Flea beetle and root weevil larvae, white grubs, and wireworms	Aldrin	--	--	D, EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6 in.	Apply aldrin or dieldrin only before planting or just before fall or spring harrowing of old plantings.
	Dieldrin	0	--	EC, G, or WP	3 lb.		
Flea beetle adults	DDT	100 oil 50 hay	14	5% D	25-30 lb. D	On stubble after harvest only.	Do not feed mint hay or spent mint from DDT- or tetradifon-treated fields to livestock.
	Malathion	8	7	D or EC	1 lb.	On foliage as needed.	
Garden symphylan	Parathion	--	--	EC or WP	5 lb.	If 10 or more symphylans occur per shovel of soil, mix parathion in upper 4-6 in. before planting. Inject 8 in. deep into fallow soil every 12 in.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not apply D-D or Telone within 3 weeks before planting. Do not apply to extremely heavy soil or soil when very wet or very dry.
	D-D	--	--	Fumigant	300 lb.		
	Telone	--	--	Fumigant	300 lb.		
Spider mites	Malathion	8	7	D or EC	1 lb.	On foliage as needed.	Do not make more than 2 applications of tetradifon during the season.
	Tepp	0	3	D EC	1 lb. 0.4 lb.		
	Tetradifon	100	10	EC	10 oz.		
MUSKMELON (See Cantaloup)							

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
MUSTARD GREENS								
Aphids	Malathion	8	7	D, EC, or WP	1-1 1/4 lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.	
	Mevinphos	1	3	D, EC, or WP	1/4-1/2 lb.			
	Parathion	1	15	D, EC, or WP	1/2 lb.			
Caterpillars	Malathion (home garden only)	8	7	D, EC, or WP	1 1/4 lb.	On foliage every 7 days. On summer or fall plantings in South begin when plants appear; on other plantings when insects appear.	Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 21 days after treatment.	
	Mevinphos	1	3	D, EC, or WP	1/2 lb.			
	Naled	--	4	D or EC	1-2 lb.			
	Parathion	1	15	D, EC, or WP	1/2 lb.			
	Toxaphene	--	--	EC D or WP	2 1/2 lb. 3 3/4 lb.			
Cutworms	DDT	7	21 *	D, EC, or WP	2 lb.	To soil as needed.		
	Toxaphene	--	--	D, EC, or WP	2 lb.			
				3% B	30 lb. B	Spread on soil (not plants) in late afternoon.		Do not apply toxaphene after appearance of leaves to be eaten or marketed.
Flea beetles	DDT	7	21 *	D, EC, or WP	1 1/4 lb.	On foliage as needed.		
	Malathion	8	7	D, EC, or WP	1-1 1/4 lb.			
Harlequin bug and stink bug	DDT	7	21 *	D, EC, or WP	1 1/4 lb.			
	Naled	--	4	EC	1 1/2 lb.			
Vegetable weevil	DDT	7	21 *	D, EC, or WP	1 1/4 lb.			
	Parathion	1	15	D, EC, or WP	1/2 lb.			
	Rotenone	Exempt	1	D, EC, or powder	1/4 lb.			

* On plants intended for processing only; on others do not apply after seedling stage.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
OKRA	Malathion (home garden only) Mevinphos Parathion	--	--	D, EC, or WP	1 1/4 lb.	On foliage as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.
Aphids		0.25	1	EC	1/2 lb.		
		1	21	D, EC, or WP	1/2 lb.		
Blister beetles, caterpillars, corn earworm, cucumber beetles, flea beetles, Japanese beetle, and stink bugs		Carbaryl	10	1	D or WP		
	DDT	7	7	D, EC, or WP	1 1/4 lb.		Do not apply malathion while pods are on plants.
Leaf miners	Parathion	1	21	D, EC, or WP	1/2 lb.		
Wireworms	Ethylene dibromide	50 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. deep into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
ONION	Diazinon Parathion	0.75	10	D EC or WP	1.2 lb. 1/2 lb.	On foliage as needed.	Do not use carbophenothion or parathion in home garden; should be applied only by a trained operator.
Leaf miners		1	15	D EC or WP	9-12 oz. 1/2 lb.		
Onion maggot On green or dry onions		Diazinon	0.75	10	EC or WP		
	Malathion	8	3	D, EC, or WP	1 1/2 lb.	On foliage when flies appear. Repeat diazinon 10-14 days later. Apply malathion every 4 days.	
	Carbophenothion	0.8	--	G	In West use 0.8 oz. per 1,000 ft. row; in East use 0.4 oz.	Directly in seed furrow after seed has been dropped. Use separate hoppers for seed and chemical.	
	Ethion	1	--	G			

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
ONION (con.)	V-C 13	--	--	G	1 1/2 lb.	Directly in seed furrow after seed has been dropped. Use separate hoppers for seed and chemical.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.
Onion maggot On green or dry onions (con.)							
On dry onions only							
Onion thrips On green or dry onions	Diazinon	0.75	10	D EC or WP	1.2 lb. 1/2 lb.	On foliage of bulb crop every 10-14 days. On seed crop when heads first appear; repeat every 7 days. Use only DDT or toxaphene when plants are in bloom.	Do not apply DDT, dieldrin, or toxaphene on plants to be harvested as green or spring onions. After applying parathion to soil, keep all persons and animals off treated area for 48 hours. Do not repeat soil application of chlordane or DDT for at least 3 years.
	Malathion	8	3	D EC or WP	2 lb. 3/4 lb.		
	Mevinphos	0.25 (green onion)	1	D, EC, or WP	1/2 lb.		
	Parathion	1	15	D EC or WP	9-12 oz. 1/4 lb.		
On dry onions only	DDT	7	--	D EC or WP	3-4 lb. 1 1/2 lb.		
	Dieldrin	0.1	14	D, EC, or WP	1/2 lb.		
	Toxaphene	7	--	D EC or WP	5 lb. 2 lb.		
Wireworms	Chlordane (in East)	0.3	--	EC, G, or WP	4-8 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting. Soil temperature should be at least 50° F. when diazinon or parathion is applied.	
	DDT (only on irrigated lands in West)	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Parathion	1	--	G	4 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEA, BLACKEYE							
Aphids	Malathion	8	3	D, EC, or WP	1 1/4 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Parathion	1	15	D, EC, or WP	1/2 lb.		
Cowpea curculio	Dieldrin	0	--	G	3 lb.	To soil surface shortly before plants begin to bloom, but only when plants are dry.	Do not apply dieldrin after pods begin to form.
	Toxaphene	7	7	D, EC, or WP	3 lb.	On foliage at time of blooming; repeat in 3 and 6 days.	Do not apply DDT or toxaphene after pods begin to form to peas to be used as green snaps. Do not feed plants treated with DDT or toxaphene to dairy animals or animals being finished for slaughter.
Lygus bugs	Carbaryl	10	1	D or WP	2 lb.	On foliage when pods begin to form.	
	DDT	7	7	D, EC, or WP	1-2 lb.		
	Toxaphene	7	7	D, EC, or WP	3 lb.		
Wireworms	Aldrin	0	--	EC, G, or WP	5 lb. (in West) 3 lb. (in East)	Broadcast on soil and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	Do not treat soil for wireworms after planting.
	DDT (only on irrigated lands in West)	7	--	EC, G, or WP	10 lb.		Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
	Dieldrin	0	--	EC, G, or WP	3 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEA, GARDEN							
Alfalfa looper and celery looper	Malathion + Perthane	8 *	--	4% + 5% D	30 lb. D	On foliage as needed.	Do not use demeton, Di-Syston, mevinphos or parathion in home garden; should be applied only by a trained operator.
	Methoxychlor	14	7	D, EC, or WP	2 lb.		
Aphids	Demeton	0.75	21	EC	1/4 lb.	Do not apply Perthane after pods begin to form, or feed treated plants to livestock.	Do not apply Di-Syston after planting.
	Malathion	8	3	D, EC, or WP	1-1 1/4 lb.		
	Mevinphos	0.25 peas 1 forage	1	D or EC	1/2 lb.		
	Parathion	1	15 **	D, EC, or WP	1/2 lb.		
	Di-Syston	0.75 peas 5 vines	--	G	1 lb.	In seed furrow at time of planting.	Do not apply DDT to varieties with edible pods after blooms appear, or to plants to be fed to dairy animals or animals being finished for slaughter.
Pea weevil	DDT	7	--	D, EC, or WP	1-1 1/4 lb.	To foliage during early bloom period before eggs are laid.	Do not treat soil for wireworms after planting.
	Malathion	8	7 ***	D or EC	1-1 1/4 lb.		
	Methoxychlor	14	7	D or WP	1-1 1/2 lb.		
	Parathion	1	15 **	D, EC, or WP	1/2 lb.		
Wireworms In West	DDT	7	--	EC or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Diazinon	0.75 shelled peas 10 hay 25 green vines	--	G	3 lb.		
	Dieldrin	0	--	EC or WP	3 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	Do not repeat soil application of DDT or dieldrin for at least 3 years.
	Parathion	1	--	G	4 lb.		

* For malathion only; no tolerance for Perthane.

** 10 days if plants are not to be fed to livestock.

*** 3 days if plants are not to be fed to livestock.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEPPERS							
Aphids	Demeton	0.75	3	EC	4-6 oz.	On foliage as needed.	Do not use demeton or mevinphos in home garden; should be applied only by a trained operator.
	Diazinon	0.75	5	EC D	1/4 lb. 1 lb.		
	Endosulfan	2	1	D EC or WP	1 lb. 0.5 lb.		
	Malathion (home garden only)	8	3	D, EC, or WP	1 1/2 lb.		
	Mevinphos	0.25	1	D or EC	1/2 lb.		
Cutworms (soil)	DDT	7	5	D, EC, or WP	2 lb.	To soil as needed.	In California do not apply mevinphos with a hand sprayer or duster.
	Toxaphene	7	5	D, EC, or WP	2 lb.	Spread on soil (not plants) late in afternoon.	
				3% B	40 lb. B		
European corn borer	Carbaryl	10	1	D WP	1 1/2 lb. 1 lb.	On foliage as needed.	Wash peppers treated with DDT or TDE in water containing a detergent (1 lb./50 gal.) and rinse in clean water.
	DDT	7	5	EC or WP	1 lb.		
Flea beetles	DDT	7	5	D or WP	1 1/4 lb.		
	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.		
	Methoxychlor	14	1	D or WP	1 1/2 lb.		
Hornworms	DDT	7	5	D, EC, or WP	2-3 lb.		
	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.		
	TDE	7	1	D, EC, or WP	2-3 lb.		
Leaf miners	Diazinon	0.75	5	D EC or WP	1 lb. 1/4 lb.		
Pepper maggot	Endosulfan	2	1	D, EC, or WP	1/2 lb.		
	Malathion	8	3	D, EC, or WP	1 1/2 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEPPERS (con.)							
Pepper weevil	DDT	7	5	D, EC, or WP	1 1/2-3 lb.	To infested foliage after weevils appear and repeat every 7-10 days.	Do not use parathion in home garden; should be applied only by a trained operator.
	Toxaphene	7	5	D, EC, or WP	3 lb.		
Spider mites	Kelthane	5	2	D, EC, or WP	12 oz.	On foliage as needed.	Wash peppers treated with DDT or toxaphene in water containing a detergent (1 lb./50 gal.) and rinse in clean water.
Wireworms	Chlordane (In East)	0.3	--	EC, G, or WP	4-8 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT in fall or at least 6 weeks before planting.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT (only on irrigated lands in West)	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	Do not repeat soil application of chlordane, DDT, or dieldrin for at least 3 years.
	Dieldrin	0.1	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide (in West)	30 (inorganic bromide)	--	83% soln. (12 lb./ gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
POTATO							
Aphids In Northeast	Endosulfan	--	--	EC or WP	1/4-1/2 lb.	To foliage. Apply in July and repeat if needed.	Do not use Di-Syston, endrin, or parathion in home garden; should be applied only by a trained operator.
	Endrin	0	3	EC	1/4-1/2 lb.		
	Malathion	8	--	EC or WP	1/2-1 lb.		
	Parathion	--	5	D, EC, or WP	3-5 oz.	Apply in fertilizer band or in planting furrow with special applicator attached to planter.	Do not apply endrin after cracks in the soil begin to expose the tubers.
	Di-Syston	0.75	75	G	1-2 lb.		

Continued on page 71

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Aphids (con.) In Northwest and Southwest	Demeton *	0.75	21	EC	1/2 lb.	To foliage. In Northwest apply to seed crop when aphids appear, and to table crop June 15 and repeat every 10-12 days to at least August 1.	Do not use demeton, Di-Syston, endrin, or parathion in home garden; should be applied only by a trained operator.
	Endosulfan	--	--	D or EC	1 lb. (1/2 lb. in Southwest and in coastal areas)		
	Endrin	0	3	D or EC	9 oz.	In Southwest apply as needed. Only endosulfan is recommended for aircraft applications.	Do not apply endrin after cracks in the soil begin to expose the tubers.
	Di-Syston	0.75	75	G	2 1/2-3 lb.	Apply to soil in bands on both sides of row at planting time; except in long-season areas apply to early plantings as sidedressing after plants are up but not later than May 20. (In addition, 1 or more foliage applica- tions of endosulfan may be needed in July or August in the Northwest.)	
	Diazinon	--	14	3% D EC or WP	25-35 lb. D 0.4-0.5 lb.	Apply weekly as needed.	Do not feed tubers from endosulfan- or endrin- treated fields to dairy animals.
	Endosulfan	--	--	D or WP EC	3/4-1 1/2 lb. 1/2-1 lb.		
	Endrin	0	3	D or EC	4-8 oz.		
	Parathion	--	5	D, EC, or WP	4-8 oz.		
	Di-Syston	0.75	75	G	2-3 lb.	In furrow or as side- dressing at planting time.	
In Southeast							

* Not effective in hot dry areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Armyworms	DDT	1	--	D, EC, or WP	1 1/2-2 lb.	To foliage. Migrating armyworms should be killed on <u>nearby</u> <u>vegetation</u> before they reach potato fields.	Do not use endrin, Guthion, or parathion in home garden; should be applied only by a trained operator.
	Toxaphene	--	--	D or EC	1 1/2-2 lb.		
Blister beetles	DDT	1	--	D or WP EC	1 1/2-2 lb. 2/3-1 lb.	On beetles when present in damaging numbers. They usually occur in small sections of field.	Do not feed vegetation treated with DDT or toxaphene to poultry, dairy animals, or animals being finished for slaughter.
	Naled	--	--	D or EC	1 lb.		
	Parathion	--	5	D, EC, or WP	8 oz.		
	Toxaphene	--	--	D EC	2 1/2 lb. 1 1/2-2 lb.		
Caterpillars	DDT	1	--	D, EC, or WP	1 1/2-2 lb.	On foliage as needed.	Do not apply endrin after cracks in the soil begin to expose the tubers.
	Endrin	0	3	D or EC	1/4-1/2 lb.		
	Toxaphene	--	--	D EC	2 1/2 lb. 1 1/2-2 lb.		
Colorado potato beetle In Northeast	Aldrin *	0.1	--	D, EC, or WP	1/2 lb.	On foliage when 25% of stand is present and 7 days later.	Do not feed tubers from fields treated with aldrin, DDT, endrin, or toxaphene to dairy animals.
	Carbaryl	--	--	WP	12 oz.		
	DDT *	1	--	D, EC, or WP	1 1/2-2 lb.		
	Dieldrin *	0.1	3	D, EC, or WP	1/4-1/2 lb.		
	Guthion	--	7	EC	6 oz.		
Continued on page 73							

* Not effective in some areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Colorado potato beetle (con.) In Southeast	Carbaryl	--	--	D or WP	1-2 lb.	On foliage when eggs begin to hatch; repeat as needed.	Do not use endrin in home garden; should be applied only by a trained operator.
	DDT *	1	--	D or WP EC	1-1 1/2 lb. 1/2-1 lb.		
	Dieldrin	0.1	3	D, EC, or WP	1/4-1/2 lb.		
	Endosulfan	--	--	D, EC, or WP	1/2-1 lb.		
	Endrin	0	3	D or EC	1/4-1/2 lb.		
	Naled	--	--	D or EC	1 lb.		
In West	Carbaryl	--	--	D	1-1 1/2 lb.	On foliage when beetles become abundant in the spring, or shortly after eggs hatch and, if needed, 10-14 days later.	Do not apply endrin after cracks in the soil begin to expose the tubers.
	DDT	1	--	D or EC	1-1 1/2 lb.		
	Dieldrin	0.1	3	EC	1/2 lb.		
	Endosulfan	--	--	EC	1/2-1 lb.		
	Endrin	0	3	D or EC	6-9 oz.		
Cucumber beetles Adults	Carbaryl	--	--	D or WP	1 lb.	On foliage as needed.	Do not feed tubers from fields treated with DDT, dieldrin, endosulfan, or endrin to dairy animals.
	DDT	1	--	D or WP EC	1-1 1/2 lb. 1/2-1 lb.		
	Naled	--	--	D or EC	1 lb.		

* Not effective in some areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Cutworms	DDT	1	--	D, G, or WP EC	2 lb. 1 lb.	To soil and foliage when cutworms appear.	Do not use endrin or parathion in home garden; should be applied only by a trained operator.
European corn borer	DDT	1	--	D EC or WP	2 lb. 1 lb.	On foliage as needed; in New England each week of June and August.	
	Endrin	0	3	EC	1/4 lb.		
False chinch bug	Endosulfan	--	--	EC	1 lb.	On foliage of infested plants.	Do not apply endrin after cracks in the soil begin to expose the tubers.
	Malathion	8	--	D, EC, or WP	1 lb.		
Flea beetles Adults	Carbaryl	--	--	D or WP	8-12 oz.	On foliage. In Southeast as needed; elsewhere when 25% of stand is present and 7 days later.	Do not feed tubers from fields treated with DDT, dieldrin, endosulfan, or endrin to dairy animals.
	DDT *	1	--	D or WP EC	1-1 1/2 lb. 2/3-1 lb.		
	Dieldrin *	0.1	3	D, EC, or WP	1/2 lb.		
	Endosulfan *	--	--	D or EC	1/2-1 lb.		
	Endrin *	0	3	D or EC	5-9 oz.		
Garden symphylan	Parathion	--	--	EC or WP	5 lb.	Broadcast on soil surface before planting and thoroughly work into upper 6 in.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
Continued on page 75							
* Not always effective in some areas							

Continued on page 75

* Not always effective in some areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Garden symphylan (con.)	D-D	--	--	Fumigant	300 lb.	Inject 8 in. deep into fallow soil every 12 in. at least 3 weeks before planting. Do not apply to extremely heavy soil or soil when very wet or very dry.	Do not use D-D, Guthion, parathion, or Telone in home garden; should be applied only by a trained operator.
	Telone	--	--	Fumigant	300 lb.		
Grasshoppers	Aldrin	0.1	--	EC or WP D	4 oz. 6 oz.	To <u>nearby vegetation</u> before insects reach potato fields; repeat as needed.	Do not feed plants treated with aldrin or toxaphene to poultry, dairy animals, or animals being finished for slaughter.
	Toxaphene	--	--	D EC or WP 1% B	2 1/2 lb. 1 1/2 lb. 20 lb. B		
Leafhoppers	DDT	1	--	D or WP EC	1-1 1/2 lb. 2/3-1 lb.	On foliage when leafhoppers first appear; repeat every 10 days as needed.	Do not feed tubers from fields treated with aldrin, DDT, endosulfan, or toxaphene to dairy animals.
	Endosulfan *	--	--	EC	1/2-1 lb.		
	Malathion	8	--	EC	1/2-1 lb.		
	Methoxychlor	--	--	WP	2 1/4 lb.		
	Parathion	--	5	D, EC, or WP	4-8 oz.		
Leaf miners	Diazinon	--	14	EC or WP	6-8 oz.	On foliage as needed.	
	Guthion	--	7	D EC or WP	7-10 oz. 6-8 oz.		
	Parathion	--	5	D, EC, or WP	8 oz.		

* Not always effective in Northeastern and North Central States.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Millipedes	DDT	1	--	D	3 lb.	On foliage or soil surface as needed.	Do not use carbophenothion, Di-Syston, endrin, Guthion, or parathion in home garden; should be applied only by a trained operator. Do not feed tubers from fields treated with chlordane, DDT, endosulfan, endrin, or Kelthane to dairy animals.
Mites	Carbophenothion (Northwest only)	--	--	EC	1 lb.	On foliage as needed.	
	Kelthane	--	--	EC	1 lb.		
	Kelthane + sulfur	--	--	4% + 50% D	1 1/2 lb. Kelthane		
	Parathion + sulfur	--	5	2% + 50% D	12 oz. parathion		
Mole crickets	Chlordane	0.3	--	D, EC, G, or WP	2 lb.	Broadcast on soil surface before planting.	
Plant bugs (including shield-shaped bugs)	DDT	1	--	D or WP EC	1 1/2-2 lb. 1/2-1 lb.	On foliage as needed.	
	Endosulfan	--	--	EC	1/2-1 lb.		
	Parathion	--	5	D, EC, or WP	4-8 oz.		
Potato psyllid	DDT	1	--	D EC or WP	1-1 3/4 lb. 1 lb.	On foliage when 1 adult is found per 100 sweeps; repeat every 2 weeks 4 or 5 times.	
	Parathion	--	5	D	4-8 oz.		
	Di-Syston	0.75	75	G	2 1/2-3 lb.	Apply in soil in bands on both sides of row at planting time.	
Potato tuberworm In field	DDT	1	--	EC	1 lb.	On foliage when tuberworms begin to web leaves together; repeat in 10 days.	
	Endosulfan	--	--	D or EC	1/2-1 lb.		
	Endrin	--	3	EC	6 oz.		
	Guthion	--	7	D, EC, or WP	0.5 lb.		
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VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)	DDT Methoxychlor	1	--	5% D	1 1/2-2 oz./100 lb. tubers	On tubers when put in storage.	Do not use parathion in home garden; should be applied by a trained operator.
Potato tuberworm (con.) In seed storage		--	--	5% D	1 1/2-2 oz./100 lb. tubers		
Slugs	Metaldehyde + chlordane	None + 0.3	--	2.5% + 5% B	10 lb. B	Broadcast on soil late in day when damage is observed.	Do not use tubers treated with DDT or methoxychlor for food or feed.
	Metaldehyde + calcium arsenate	None	--	2.5% + 5% B	10 lb. B		
Southern potato wireworm	Diazinon	--	--	EC, G, or WP	1 1/2-2 lb.	Broadcast on soil and immediately work thoroughly into upper 4-6 inches with double-disk harrow. Consult local agricultural authority as to best time to apply. If soil is to be turned to a depth of more than 6 inches apply either 3 weeks before plowing or wait until soil has settled.	Do not make soil treatments with diazinon and parathion after planting. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Parathion	--	--	EC, G, or WP	3 lb.		
Three-lined potato beetle	Carbaryl	--	--	WP	1/2 lb.	On foliage as needed.	Do not feed tubers from fields treated with chlordane, DDT, or endosulfan to dairy animals.
	DDT	1	--	D or WP EC	1 1/2-2 lb. 2/3-1 lb.		
	Endosulfan	--	--	EC	1/2 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Thrips	Aldrin	0.1	--	D or EC	1/4-1/2 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	DDT	1	--	D EC	1-1 1/2 lb. 2/3-1 lb.		
	Parathion	--	5	D, EC, or WP	4-8 oz.		
Vegetable weevil	DDT	1	--	D or WP EC	1-1 1/2 lb. 3/4 lb.		Do not feed tubers from fields treated with aldrin, chlordane, DDT, dieldrin, or endosulfan to dairy animals.
	Dieldrin	0.1	3	D, EC, or WP	1/4-1/2 lb.		
	Parathion	--	5	D, EC, or WP	1/2 lb.		
Whiteflies	DDT	1	--	D or WP EC	1 1/2 lb. 1 lb.	On foliage when adults become abundant.	Do not repeat soil application of chlordane or DDT for at least 3 years.
	Dieldrin	0.1	3	D or EC	1/2 lb.		
	Endosulfan	--	--	EC	1/2-1 lb.		
White-fringed beetles Grubs	Chlordane	0.3	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 3 in.	
	DDT	1	--	EC, G, or WP	10 lb.		
White grubs	Chlordane	0.3	--	EC, G, or WP	4-10 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in.	
	DDT	1.0	--	EC, G, or WP	10 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POTATO (con.)							
Wireworms * In East	Chlordane	0.3	--	EC, G, or WP	4-8 lb.	Broadcast on soil and thoroughly work into upper 4-6 in.	Do not use parathion in home garden; should be applied only by a trained operator.
	Diazinon	--	--	EC, G, or WP	1 1/2-2 lb.		Do not make soil treatments after planting.
In West	DDT	1	--	EC or WP	10 lb.	Broadcast on soil and thoroughly work into upper 6-9 in. Apply DDT in the fall or 3 months before planting.	Do not repeat soil application of chlordane or DDT for at least 3 years.
	Diazinon	--	--	G	3 lb.	Broadcast on soil and immediately work thoroughly into upper 6-9 in., 1 week before planting.	Do not feed tubers from chlordane- or DDT-treated fields to dairy animals.
	Parathion	--	5	G	4 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Ethylene dibromide	75 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. deep into fallow soil every 12 in.	Do not apply within 3 weeks before planting.

* Except southern potato wireworm in South where it is resistant to chlordane. See control for this insect on page 51.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PUMPKIN							
Aphids	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Malathion (in home garden only)	8	3	D, EC, or WP	1 3/4 lb.		
	Parathion	1	10	D or WP	1/4-1/2 lb.		
Cucumber beetles	Carbaryl	10	1	D or WP	1 lb.		Do not apply toxaphene after edible parts start to form. May be injurious to plant growth.
	Malathion	8	3	D, EC, or WP	1 3/4 lb.		
	Methoxychlor	14	1	D or WP	1 1/2 lb.		
	Parathion	1	10	D, EC, or WP	1/2 lb.		
Cutworms	DDT (home garden only)	7	5	D, EC, or WP	2 lb.	To soil surface.	Do not apply parathion before vining.
	Parathion	1	10	D or WP	1/4-1/2 lb.		
	Toxaphene	--	--	D, EC, or WP	2 lb.	To soil surface (not on plants.)	
				3% B (home garden only)	40 lb. B	Scatter on soil (not plants) late in afternoon.	
Squash bug	Carbaryl	10	1	D or WP	1 lb.	On foliage as needed.	Do not use lindane in this manner in fields to be planted within 2 years to potato or other root crops, or peanuts, as it may adversely affect their flavor.
	Parathion	1	10	D, EC, or WP	1/2 lb.		
Squash vine borer	Carbaryl	10	1	D or WP	1 lb.	Once or twice a week to stems and vines at base of plants.	
	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.		
	Lindane	10	1	1% D 25% WP	20-30 lb. D 1 lb. WP		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
RUTABAGA							
Aphids	Malathion	8	3	D, EC, or WP	1 1/4 lb.	On foliage when aphids appear; repeat weekly as long as needed.	Do not use parathion or tepp in home garden; should be applied only by a trained operator.
	Parathion	1	7	D, EC, or WP	1/2 lb.		
	Tepp	0	3	D or EC	1/2 lb.		
Caterpillars	Malathion	8	3	D, EC, or WP	1 1/4 lb.	On foliage every 7 days. On summer or fall plantings in South begin when true leaves appear; on others when insects appear.	Do not use foliage treated with DDT or toxaphene for food or feed.
	Parathion	1	7	D, EC, or WP	1/2 lb.		
	Toxaphene	7	--	D, EC, or WP	2-3 lb.		
Cutworms	DDT	7	--	D, EC, or WP	2 lb.	To soil surface.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Toxaphene	7	--	D, EC, or WP	2 lb.		
Flea beetles	DDT	7	--	D, EC, or WP	1 1/4 lb.	On foliage as needed.	
	Methoxychlor	14	7	D or WP	1 1/2 lb.		
Root maggots	Dieldrin *	0.25	--	EC or WP	2-3 lb.	Broadcast on soil surface before planting and thoroughly work into upper 4-6 in.	Do not repeat soil application of DDT or dieldrin for at least 3 years.
Wireworms	DDT (only on irrigated lands in West)	7	--	EC or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	Do not feed rutabaga roots or foliage from fields treated with DDT or dieldrin to dairy animals.
	Dieldrin	0.25	--	EC or WP	3 lb.		
	Parathion	1	--	G	4 lb.	Soil temperature should be at least 50° F. when parathion is applied.	

* Not effective in some areas.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SPINACH							
Alfalfa looper	DDT	7	--	D, EC, or WP	1 lb.	On foliage as needed.	Do not use Di-Syston, mevinphos, or parathion in home garden; should be applied only by a trained operator.
	Malathion + Perthane	8 + 15	14	4% + 5% D	30 lb. D		
	Methoxychlor	14	21	D or WP	1 1/4 lb.		
	Toxaphene	7	21	D	2 lb.		
Aphids	Diazinon	0.75	14	D, EC, or WP	0.4-0.5 lb.		Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 21 days after treatment.
	Malathion	8	7	D, EC, or WP	1 1/4 lb.		
	Mevinphos	1	4	D, EC, or WP	1/2 lb.		
	Parathion	1	14	D, EC, or WP	1/2 lb.		
	Di-Syston	0.75	--	G	1 lb.	Apply in seed furrow at planting time.	Do not apply DDT after seedling stage.
Beet webworm	DDT	7	--	D, EC, or WP	1 1/2 lb.	On foliage as needed.	Do not apply toxaphene more than once per season.
	Malathion	8	7	D, EC, or WP	1 1/4 lb.		
	Pyrethrum	Exempt	1	0.2% D EC	20-30 lb. D 1/2 oz.		
Leaf miner	Diazinon	0.75	14	D, EC, or WP	1/4-1/2 lb.		
	Parathion	1	14	D, EC, or WP	1/2 lb.		
Wireworms	Aldrin	0.25	--	EC or WP	3 lb. (in East) 5 lb. (in West)	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	Do not repeat soil application of aldrin and DDT for at least 3 years.
	DDT (only on irrigated lands in West)	7	--	EC or WP	10 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SQUASH							
Aphids	Diazinon	0.75	7 *	D EC	1 lb. 1/2 lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator. Do not apply toxaphene while fruit is on plants. Do not apply parathion before vining. Do not use lindane in this manner in fields to be planted within 2 years to potato or other root crops, or peanuts, as it may adversely affect their flavor.
	Endosulfan	2	1	D, EC, or WP	1/2-1 lb.		
	Malathion (home garden only)	8	1	D, EC, or WP	1 3/4 lb.		
	Naled	--	7 **	D or WP	1 1/2 lb.		
	Parathion	1	15	D, EC, or WP	1/4-1/2 lb.		
Cucumber beetles	Carbaryl	10	1	D or WP	1/2-1 lb.		
	Endosulfan	2	1	D, EC, or WP	1/2-1 lb.		
	Malathion	8	1	D, EC, or WP	1 3/4 lb.		
	Methoxychlor	14	1	D or WP	1 1/2 lb.		
	Parathion	1	15	D, EC, or WP	1/4 lb.		
Cutworms	DDT (home garden only)	7	5	D, EC, or WP	2 lb.	On soil surface, not plants.	
	Carbaryl	10	1	D or WP	1/2-1 lb.	On foliage as needed.	
	Parathion	1	15	D, EC, or WP	1/4 lb.		
	Toxaphene	--	--	D, EC, or WP	2 lb.	On soil before planting.	
Leaf miner	Diazinon	0.75	7 *	D EC	1 lb. 1/2 lb.	On foliage as needed.	
	Parathion	1	15	D, EC, or WP	1/2 lb.		
Pickleworm	Carbaryl	10	1	D or WP	1 lb.	On foliage when worms appear in blossoms; repeat every week.	
	Lindane	10	1	D, EC, or WP	4 oz.		
Squash bug	Carbaryl	10	1	D or WP	1 lb.	On foliage as needed.	
	Parathion	1	15	D, EC, or WP	1/2 lb.		

* 3 days on winter squash.

** 4 days on summer squash.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SQUASH (con.)							
Squash vine borer	Carbaryl	10	1	D or WP	1 lb.	Weekly to flower buds, stems, and vines beginning when moths first appear.	Do not use lindane in this manner in fields to be planted within 2 years to potato or other root crops, or peanuts, as it may adversely affect their flavor.
	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.		
	Lindane	10	1	D, EC, or WP	4 oz.		
SWEET CORN							
Corn earworm and fall armyworm	Carbaryl	5 kernels plus cob with husk removed 25 fodder or forage	--	WP	1 1/2 lb./25 gal	On larvae in silks and ears at 1 or 2 day intervals beginning on day silks appear; use a pressure of 100-140 lb./sq. in.; wet silks thoroughly. In areas of heavy infestation, especially in the South, as many as 5-8 applications may be required. On larvae in whorl (budworm damage) directed so spray will run into whorls of plant before tasseling and silking. Use a pressure of 100-140 lb./sq. in.	Do not feed forage, including ensilage, from plants treated with DDT to dairy animals or animals being finished for slaughter.
	DDT	3.5 kernels plus cob with husk removed	--	EC	For corn earworm 2 lb./25 gal. For fall armyworm 1-2 lb./25 gal.		
Corn sap beetle	Malathion (home garden only)	2 kernels plus cob with husk removed 8 forage	5	EC	1 lb.	6 days after silks appear and repeat 10 days later.	

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SWEET CORN (con.)							
European corn borer	Carbaryl	5 kernels plus cob with husk removed	--	WP or G	1 1/2 lb.	When borers start hatching and at 5-day intervals if necessary.	Do not use EPN in home garden; should be applied only by a trained operator.
		25 fodder or forage	--				
	DDT	3.5 kernels plus cob with husk removed	--	D EC G	2 lb. 1 1/2 lb. 1 lb.		
	Diazinon	0.75 kernels plus cob with husk removed	10 fodder	G	1 lb.		
		40 forage					
	EPN	3	14	G WP	1/5 lb. 1/4 lb.		
	Ryania	Exempt	--	40% D	30-40 lb. D		
	Toxaphene	7	--	G	2 lb.		
Japanese beetle	Carbaryl	5 kernels plus cob with husk removed	--	WP	1 lb.	On silks and foliage.	
		25 fodder or forage	--				
	DDT	3.5 kernels plus cob with husk removed	--	D, EC, or WP	1 1/2 lb.		
	Methoxychlor	14	7	D, EC, or WP	1 1/2 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SWEET CORN (con.)							
Rootworms	Aldrin	0	--	EC, G, or fertilizer mixture	1-2 lb.	Minimum dosage to row or hill when planting; maximum broadcast before planting and immediately work into upper 3 in. Apply diazinon in the furrow only when planting.	Do not use parathion or phorate in home garden; should be applied only by a trained operator. Do not apply heptachlor to soils where hops may be grown as it may adversely affect the hop plant.
	Chlordane	--	--	EC, G, or fertilizer mixture	1-1 1/2 lb.		
	Diazinon *	0.75 kernels plus cob with husk removed 10 forage	--	G	1 lb.		
	Heptachlor	--	--	EC, G, or fertilizer mixture	1-2 lb.		
	Parathion *	1	--	G	1 lb.		
	Phorate *	0	--	G	1 lb.		
Wireworms	Aldrin	--	--	EC or G	1 1/2-2 lb.		
SWEETPOTATO							
Sweetpotato weevil	Dieldrin	0.1	21	2% D	75 lb. D in one or 40 lb. in each of two applications	To soil at base of plants in strips 6-8 in. wide.	
Wireworms In Southeast	Chlordane	0.3	--	EC, G, or WP	4-6 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in. Apply DDT in fall or at least 6 weeks before planting. Broadcast on foliage when roots begin to enlarge. Soil temperature should be at least 50° F. when diazinon is applied.	Do not feed sweetpotato byproducts or culls from fields treated with chlordane, DDT, or dieldrin to dairy animals or animals being finished for slaughter. Do not repeat soil application of chlordane, DDT, or dieldrin for at least 3 years.
	DDT **	7	--	EC, G, or WP	20 lb.		
	Dieldrin	0.1	--	EC, G, or WP	2 lb.		
	Diazinon	--	--	G	3 lb.		

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* Use when rootworms have developed resistance to other insecticides.
 ** For southern potato wireworm only.

Use Pesticides Safely—Follow the Label

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SWEETPOTATO (con.)	DDT Dieldrin	7	--	EC, G, or WP	10 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	Do not feed sweetpotato byproducts or culls from fields treated with DDT or dieldrin to dairy animals or animals being finished for slaughter. Do not repeat soil application of DDT or dieldrin for at least 3 years.
Wireworms (con.) In Southwest		0.1	--	EC, G, or WP	3 lb.		
SWISS CHARD	Diazinon Malathion Parathion Tepp	0.75	12	D EC or WP	0.4-1 lb. 0.4-0.5 lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use parathion or tepp in home garden; should be applied only by a trained operator. Parathion is not effective at low temperatures.
Aphids		8	7	D, EC, or WP	1 1/4 lb.		
		1	21	D, EC, or WP	1/2 lb.		
		0	3	D or EC	1/2 lb.		
Beet webworm	Pyrethrum	Exempt	1	D or EC	1/2 oz.	On foliage as needed.	
Flea beetles	Rotenone	Exempt	1	D or powder	1/4 lb.		
TOMATO, OUTDOOR	Demeton Diazinon Endrin	0.75	3	EC	4-6 oz.	On foliage as needed.	Do not use demeton or endrin in home garden; should be applied only by a trained operator.
Aphids In field		0.75	3	D EC or WP	3/4 lb. 1/4-1/2 lb.		
Continued on page 88		0	14	D or EC	1/4-1/2 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, OUTDOOR (con.)							Do not use Guthion, mevinphos, or parathion in home garden; should be applied only by a trained operator.
Aphids (con.) In field	Malathion	8	1	D, EC, or WP	1 1/4 lb.	On foliage as needed.	
	Mevinphos	0.25	1	D, EC, or WP	1/2 lb.		
	Parathion	1	10	D, EC, or WP	1/2 lb.		
Armyworm (See Tomato fruitworm)							
Blister beetles	DDT	7	5	D	3 lb.	On beetles.	Parathion is not effective at low temperatures.
	Endosulfan	2	1	D or EC	1 lb.		
	Methoxychlor	14	1	D or WP	1 3/4 lb.		
	Toxaphene	7	3	D	5 lb.		
Cabbage looper	Endosulfan	2	1	D or EC	3/4 lb.	On foliage as needed.	
	Guthion	2	1	D, EC, or WP	3/4 lb.		
	Mevinphos	0.25	1	D, EC, or WP	1/2 lb.		
	Naled	--	4	D or EC	1 lb.		
	Toxaphene + parathion	7 + 1	10	D or WP	4 lb. + 1/2 lb.		
Colorado potato beetle	Carbaryl	10	1	D or WP	1-2 lb.		
	DDT	7	5	D, EC, or WP	1 1/2 lb.		
	Endosulfan	2	1	D or EC	1 lb.		
	Naled	--	4	EC	1 lb.		
Cutworms (soil)	DDT	7	5	D, EC, or WP	2 lb.	To soil as needed.	
	Toxaphene	7	3	D, EC, or WP	2 lb.		
				3% B	40 lb. B	Scatter on soil (not plants) in late afternoon.	

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, OUTDOOR (con.)							
Drosophila	Aldrin	0.1	1	D, EC, G, or WP	1/2 lb.	On foliage and fruit as needed.	Do not use D-D, parathion, or Telone in home garden; should be applied only by a trained operator.
	Diazinon	0.75	1	G D, EC, or WP	1 lb. 3/4 lb.		
	Malathion	8	1	D, EC, or WP	2 lb.		
	Pyrethrins + piperonyl butoxide	1 + 8	--	0.1% D	1/2-1 lb. D/ton of fruit	On fruit immediately after harvest.	
Flea beetles	Carbaryl	10	1	D or WP	1-2 lb.	On foliage as needed.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT	7	5	D, EC, or WP	1-1 1/2 lb.		
	Endosulfan	2	1	D, EC, or WP	1 lb.		
	Toxaphene	7	3	D	3 lb.		
Garden symphytan	Parathion	1	10	G or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in.	Do not apply D-D or Telone within 3 weeks before planting. Do not apply to extremely heavy soil or soil when very wet or very dry.
	D-D	--	--	Fumigant	300 lb.	Inject 8 in. deep into fallow soil every 12 in.	
	Telone	--	--	Fumigant	300 lb.		
Hornworms	Carbaryl	10	1	D or WP	2-4 lb.	On foliage as needed.	
	Endosulfan	2	1	D, EC, or WP	1 lb.		
	TDE	7	1	D, EC, or WP	2-3 lb.		
	Toxaphene	7	3	D	3 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, OUTDOOR (con.)							
Leaf miners	Diazinon	0.75	3	D EC or WP	3/4 lb. 1/2 lb.	On foliage as needed.	Do not use carbophenothion, demeton, Di-Syston, Guthion, or parathion in home garden; should be applied only by a trained operator.
	Guthion	2	1	D, EC, or WP	1/2-3/4 lb.		
	Parathion	1	10	D, EC, or WP	1/2 lb.		
	Di-Syston	0.75	30	G	2 lb.	In furrow at time of planting. Sidedress once after plant emergence.	
Spider mites	Carbophenothion	0.8	7	D, EC, or WP	1 lb.	On foliage as needed.	
	Demeton	0.75	3	EC	4-6 oz.		
	Kelthane	5	2	D EC or WP	1 lb. 9 oz.		
	Malathion	8	1	D, EC, or WP	1 1/4 lb.		
	Parathion	1	10	D, EC, or WP	1/2 lb.		
Stalk borer	DDT (home garden only)	7	5	D, EC, or WP	1-1 1/2 lb.		
Stink bugs	Carbaryl	10	1	D or WP	2-4 lb.		
	DDT	7	5	D, EC, or WP	1-1 1/2 lb.		
	Endosulfan	2	1	D or EC	1 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, OUTDOOR (con.)							
Tomato fruitworm, tomato pinworm, armyworms, and climbing cutworms	Cryolite	7 (fluorine)	--	Bait (1 lb. in 10 lb. corn meal) *	60 lb. B	Scatter evenly over foliage. Time as for dusts.	Do not use parathion in home garden; should be applied only by a trained operator. After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	Carbaryl	10	1	D or WP	2 lb.	On foliage when fruits of main crop are setting; repeat in 2 and 4 weeks.	
	DDT	7	5	D, EC, or WP	3 lb.		
	TDE	7	1	D, EC, or WP	3 lb.		
	Toxaphene	7	3	D, EC, or WP	5 lb.		
	Toxaphene + DDT	7	5	D or EC	3 lb. + 1 lb.		
Tomato psyllid	DDT	7	5	5% D 50% WP	25-35 lb. D 2 lb. WP	On foliage when plants are 6 in. high if psyllid is present in area; repeat in 10 and 20 days.	Do not repeat soil application of aldrin, chlordane, or dieldrin for at least 3 years.
Tomato russet mite	Parathion	1	10	D, EC, or WP	1/2 lb.	On foliage when fruit begins to set; repeat in 2-4 weeks.	
	Sulfur	Safe	1	20-50% D Wettable	30 lb. D 10 lb. in S.		
	Toxaphene	7	3	D, EC, or WP	5 lb.		
Whiteflies	Endosulfan	2	1	D or EC	1 lb.	On foliage as needed.	
Wireworms In East	Aldrin **	0.1	--	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in.	
	Chlordane **	0.3	--	EC, G, or WP	4-8 lb.		
	Diazinon	0.75	--	EC, G, or WP	2 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	
	Dieldrin**	0.1	--	EC, G, or WP	2-3 lb.		
	Parathion	1	--	EC, G, or WP	3 lb.		

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* Not effective against pinworm.

** Not effective in Southeast.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, OUTDOOR (con.)							Do not use parathion in home garden; should be applied only by a trained operator.
Wireworms (con.) In West	Aldrin	0.1	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT	7	--	EC, G, or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin	0.1	--	EC, G, or WP	3 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	Do not repeat soil application of aldrin, DDT, or dieldrin for at least 3 years.
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide	50 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.
TOMATO, LARGE GREENHOUSE *							
Aphids and whiteflies	Endosulfan	2	15 hr.	10% aerosol			Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
		2	1 day	EC	1 lb.	Apply in air above plants with mist blower.	
	Malathion	8	15 hr.	10% aerosol	1 lb. aerosol/50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85° F. and ventilators closed for at least 2 hours.	
	Parathion	1	10 days	10% aerosol			
	Tepp	0	3 days	5% aerosol			
	Naled	--	1 day	EC	5 oz./50,000 cu. ft.	Apply on steam pipes.	
Armyworms, cabbage looper, cutworms, and thrips	DDT	7	5	3% D	20 lb. D	Dust into air above plants.	
	Malathion	8	15 hr.	10% aerosol	1 lb. aerosol/50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85° F. and ventilators closed for at least 2 hours.	
	Parathion	1	10 days				
Cutworms (soil)	DDT	7	5	3% D	20 lb. D	On soil surface.	

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, LARGE GREENHOUSE *(con.)	Lindane	10	--	Drench: 6 oz. 25% WP/50 gal.	50 gal. drench/ 1,000 sq. ft.	Sprinkle on soil and water in. Put 1 pt. around base of each newly set plant.	Do not use aerosols that contain parathion, tepp, or the propellant methyl chloride in greenhouses connected to living quarters; should be applied only by a trained operator.
Garden symphylan							
Mealybugs, spider mites, and tomato russet mite	Naled	--	1 day	EC	5 oz./50,000 cu. ft.	Apply on steam pipes.	
	Malathion	8	15 hr.	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.	Same as for Armyworms.	
	Parathion	1	10 days	10% aerosol			
	Tepp	0	3 days	5% aerosol			
Serpentine leaf miner	Parathion	1	10 days	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.		
Tomato fruitworm and tomato pinworm	DDT	7	5	3% D	20 lb. D	In closed greenhouse in air above plants. Temperature should be 70-85° F. and ventilators closed for at least 2 hours.	
	Parathion	1	10	10% aerosol	1 lb. aerosol/ 50,000 cu. ft.		

* Any greenhouse over 20,000 cu. ft. and not attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TOMATO, SMALL GREENHOUSE *							
Aphids	Malathion	8	1	57% EC	2 tsp. EC/gal.	On foliage as needed.	Use lindane only in greenhouse.
Caterpillars	DDT	7	5	3% D	1/2 lb. D/1,000 sq. ft.	Dust into air above plants.	
	Malathion	8	1	57% EC	2 tsp. EC/gal.	On foliage as needed.	
Cutworms	DDT	7	5	3% D	1/2 lb. D/1,000 sq. ft.	On soil surface.	
Garden symphylan	Lindane	10	--	Drench: 6 oz. 25% WP/50 gal.	50 gal./1,000 sq. ft.	Sprinkle on soil and water in. Put 1 pt. around base of each newly set plant.	
Greenhouse leaf tier	DDT	7	5	3% D	1/2 lb. D/1,000 sq. ft.	Dust into air above plants.	
Greenhouse whitefly	Malathion	8	1	57% EC	2 tsp. EC/gal.	On foliage as needed.	
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/gal.		
Mealybugs	Malathion	8	1	57% EC	2 tsp. EC/gal.		
Spider mites and tomato russet mite	Kelthane	5	2	WP	1 tbsp. WP/gal.		
	Malathion	8	1	57% EC	2 tsp. EC/gal.		
Thrips and garden flea hopper	DDT	7	5	3% D	1/2 lb. D/1,000 sq. ft.	Dust into air above plants.	
	Malathion	8	1	57% EC	2 tsp. EC/gal.	On foliage as needed.	
	Rotenone	Exempt	1	4% powder	4 tbsp. powder/gal.		

* Any greenhouse less than 20,000 cu. ft. or that is totally enclosed.

* Any greenhouse less than 20,000 cu. ft. or that is attached to living quarters.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TURNIP							
Aphids	Diazinon	0.75	10	D EC or WP	0.4-1 lb. 0.4-0.5 lb.	On foliage when aphids appear; repeat weekly as needed.	Do not use mevinphos or parathion in home garden; should be applied only by a trained operator.
	Malathion	8	10*	D, EC, or WP	1 1/4 lb.		
	Mevinphos	1 tops 0.25 roots	3	D, EC, or WP	1/4-1/2 lb.		
	Parathion	1	15**	D, EC, or WP	1/2 lb.		Parathion is not effective at low temperatures. If maximum daily temperatures below 70° F. persist after application, do not harvest for 21** days after treatment.
Caterpillars	Malathion (home garden only)	8	10*	D, EC, or WP	1 1/4 lb.	On foliage every 7 days. On summer or fall plantings in South begin when plants appear; on other plantings when insects appear.	
	Mevinphos	1 tops 0.25 roots	3	D, EC, or WP	1/2 lb.		
	Naled	--	4	D or EC	1-2 lb.		
	Parathion	1	15**	D, EC, or WP	1/2 lb.		
Cutworms (soil)	DDT	7	--	D, EC, or WP	2 lb.	To soil surface.	
	Toxaphene	--	--	3% B	30 lb. B	Spread on soil (not plants) in late afternoon.	Do not feed crop residue from fields treated with DDT or toxaphene to dairy animals.
Flea beetles	DDT	7	--	D, EC, or WP	1-1 1/2 lb.	On foliage as needed.	
	Methoxychlor	14	14***	D or WP	1 3/4 lb.		
	Naled	--	4	EC	1 1/2 lb.		
	Rotenone	Exempt	1	D or S	1/4 lb.		

* 3 days if tops are not to be used for food or feed.

** 10 days if tops are not to be used for food or feed.

*** 1 day if tops are not to be used for food or feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
TURNIP (con.)							
Root maggots	Dieldrin	0.25	--	D, EC, or WP	2-3 lb.	Broadcast on soil surface before planting and thoroughly work into upper 4-6 in.	Do not use parathion in home garden; should be applied only by a trained operator.
	Diazinon	0.75	10	G	1 lb.	In seed furrow at planting.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
				EC or WP	1/2 lb.	Spray around stems of plants.	
Vegetable weevil	DDT	7	--	D, EC, or WP	1-1 1/2 lb.	On foliage as needed.	Do not repeat soil application of aldrin, chlordane, DDT, or dieldrin for at least 3 years.
	Parathion	1	15 *	D, EC, or WP	1/2 lb.		
	Rotenone	Exempt	1	D, EC, or powder	1/4 lb.		
White-fringed beetles Grubs	Aldrin	0.25	--	EC, G, or WP	2 lb.	Broadcast on soil before planting and thoroughly work into upper 3 in.	Do not feed crop residues from fields treated with aldrin, chlordane, DDT, or dieldrin to dairy animals.
	DDT	7	--	EC, G, or WP	10 lb.		
	Dieldrin	0.25	--	EC, G, or WP	1 1/2 lb.		
Wireworms In Northeast	Aldrin	0.25	--	EC, G, or WP	2-3 lb.	Broadcast on soil surface before planting and thoroughly work into upper 4-6 in.	
	Chlordane	0.3	--	EC, G, or WP	4-8 lb.		
	Dieldrin	0.25	--	EC, G, or WP	2 lb.		
In West	Aldrin	0.25	--	EC, G, or WP	5 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	
	DDT	7	--	EC, G, or WP	10 lb.		
	Dieldrin	0.25	--	EC, G, or WP	3 lb.		
	Parathion	1	--	G	4 lb.	Soil temperature should be at least 50° F. when parathion is applied.	

* 10 days if tops are not to be used for food or feed.

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
WATERMELON							
Aphids	Demeton	--	7	EC	6 oz.	On foliage as needed.	Do not use demeton, mevinphos, or parathion in home garden; should be applied only by a trained operator. Do not apply parathion before vining. Do not use toxaphene after edible parts start to form.
	Diazinon	0.75	3	D EC or WP	1 lb. 1/2 lb.		
	Endosulfan	2	1	D EC or WP	1 lb. 1/2 lb.		
	Malathion	8	1	D or EC	1 1/4 lb.		
	Mevinphos	0.5	1	D or EC	1/2 lb.		
	Parathion	1	7	D or EC	1/4-1/2 lb.		
Cucumber beetles	Malathion	8	1	D or EC	1 1/4 lb.		
	Methoxychlor	14	7	D or WP	1 3/4 lb.		
	Parathion	1	7	D or EC	1/4-1/2 lb.		
Cutworms	Parathion	1	7	D or EC	1/4-1/2 lb.	Spread on soil (not plants) in late afternoon.	
	Toxaphene	--	--	3% B	30 lb. B		
Leafhoppers	Malathion	8	1	D or EC	1 lb.	On foliage as needed.	
	Parathion	1	7	D or EC	1/3-1/2 lb.		
Leaf miners and thrips	Diazinon	0.75	3	D EC or WP	8-12 oz. 1/4-1/2 lb.		
	Parathion	1	7	D or EC	1/4-1/2 lb.		

VEGETABLE INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST OR FEEDING	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
WATERMELON (con.)							
Spider mites	Carbophenothion	0.8	5	D EC or WP	1.2 lb. 1 lb.	On foliage as needed.	Do not use carbophenothion or parathion in home garden; should be applied only by a trained operator.
	Kelthane	5	2	EC D	0.6 lb. 1 lb.		
	Parathion	1	7	D or EC	1/4-1/2 lb.		
Wireworms	Chlordane* (in East)	0.3	--	EC or WP	4-8 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in. Apply DDT at least 6 weeks before planting.	After applying parathion to soil, keep all persons and animals off treated area for 48 hours.
	DDT (in West)	7	--	EC or WP	10 lb.		
	Diazinon	0.75	--	G	3 lb.		
	Dieldrin*	0	--	EC or WP	3 lb.	Soil temperature should be at least 50° F. when diazinon or parathion is applied.	Do not repeat soil application of chlordane, DDT, or dieldrin for at least 3 years.
	Parathion	1	--	G	4 lb.		
	Ethylene dibromide (in West)	75 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. deep into fallow soil every 12 in.	Do not apply within 3 weeks before planting.

* Not effective in Southeast.

BERRY INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
BLACKBERRY, BOYSENBERRY, DEWBERRY, AND LOGANBERRY							
Aphids	Malathion	8	1	D, EC, or WP	1 $\frac{3}{4}$ lb.	On foliage as needed.	Do not use parathion in home garden; should be applied only by a trained operator.
	Parathion	1	15	D, EC, or WP	$\frac{1}{2}$ lb.		
Japanese beetle	Carbaryl	12	7	D or WP	1 $\frac{1}{2}$ lb.		
	DDT	7	--	D, EC, or WP	1 $\frac{1}{2}$ lb.		Do not apply DDT or diazinon when fruit is present.
	Malathion	8	1	D, EC, or WP	1 $\frac{3}{4}$ lb.		
Orange tortrix	TDE	7	14	D, EC, or WP	2 lb.	On foliage in Northwest when first blossoms appear.	
Raspberry crown borer	Diazinon	--	--	EC	$\frac{1}{2}$ lb.	On lower canes and crown; first week in October.	
	Parathion	1	15	EC or WP	$\frac{3}{4}$ lb.		
Raspberry fruitworm and raspberry sawfly	DDT	7	--	D, EC, or WP	1 $\frac{1}{2}$ lb.	On foliage when blossom buds first appear and just before blossoms open.	
	Rotenone	Exempt	1	D, extract, or powder	$\frac{1}{4}$ lb.		
Redberry mite	Lime sulfur	Safe	--	6 gal./100 gal.	100 gal. soln.	On dormant plants only.	
				2 $\frac{1}{2}$ gal./100 gal.	100 gal. soln.	On plants when fruit spurs are 1 ft. long.	
Red-necked cane borer	DDT	7	--	D, EC, or WP	1 $\frac{1}{2}$ lb.	On foliage just before plants bloom; repeat rotenone in about 2 weeks.	
	Rotenone	Exempt	1	D, extract, or powder	$\frac{1}{4}$ lb.		
Rose chafer	Carbaryl	12	7	D or WP	1 $\frac{1}{2}$ lb.	On foliage as needed.	
	DDT	7	--	D, EC, or WP	1 $\frac{1}{2}$ lb.		
	Methoxychlor	14	3	D or WP	1 $\frac{3}{4}$ lb.		
Rose leafhopper	DDT	7	--	D, EC, or WP	1 $\frac{1}{2}$ lb.		
	Malathion	8	1	D, EC, or WP	1 $\frac{3}{4}$ lb.		

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
BLACKBERRY, BOYSENBERRY, DEWBERRY, AND LOGANBERRY (con.)								
Rose scale	Malathion	8	1	D, EC, or WP	1¾ lb.	On foliage as needed.	Do not use demeton in home plantings; should be applied only by a trained operator.	
	Dormant oil	Exempt	--	EC	3 gal. EC/100 gal.	On dormant plants only.		
Spider mites	Demeton	--	--	EC	¼-½ lb.	On foliage as needed. Apply demeton after harvest, in late summer or fall.		
	Kelthane	5	2	EC or WP	0.8-1.2 lb.			
Stink bugs	Carbaryl	12	7	D or WP	2 lb.		Do not apply aldrin, chlordane, DDT, demeton, or dieldrin when fruit is present.	
	DDT	7	--	D, EC, or WP	1½ lb.			
Strawberry weevil	DDT	7	--	D, EC, or WP	1½ lb.	On foliage when insects first appear.		
	Methoxychlor	14	3	D or WP	1¾ lb.			
White grubs	Aldrin	--	--	EC or WP	2 lb.	Broadcast on soil and thoroughly work into upper 4-6 in.		Do not repeat soil application of aldrin, chlordane, or dieldrin for at least 3 years.
	Chlordane	0.3	--	EC or WP	10 lb.			
	Dieldrin	--	--	EC or WP	2 lb.			
BLUEBERRY								
Blueberry tip borer	Carbaryl + malathion	10 + 8	1	WP	1 lb. + ½ lb.	Just after petal fall, 10 days later, and 20 days later.	Do not use Guthion in home plantings; should be applied only by a trained operator.	
	Guthion	2	14	WP	3/8 lb.			
Cherry fruitworm	Carbaryl	10	1	WP	1 lb.	3 applications at 10-day intervals, beginning just after petal fall.		
	Guthion	2	14	WP	3/8 lb.			
	Malathion	8	1	WP	½ lb.			
Japanese beetle	Carbaryl	10	1	WP	1½ lb.	On foliage when adults appear; repeat as needed.		
	Malathion	8	1	D or EC	1 lb.			
CURRANT AND GOOSEBERRY								
Currant aphid	Malathion	8	3	WP	2 lb.	As leaf buds are opening or later if infestation occurs.		
Gooseberry fruitworm	Rotenone	Exempt	1	D or WP	¼-1/3 lb.	When webbing is observed and 7-10 days later.		

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CURRENT AND GOOSEBERRY (con.)							
Imported currantworm	Lead arsenate	7 (combined lead)	--	D or powder	3-4 lb.	Soon after leaves appear.	Do not use tepp in home plantings; should be applied only by a trained operator.
	Malathion	8	3	WP	2 lb.	When worms appear.	
	Rotenone	Exempt	1	D or WP	0.25-0.4 lb.		
San Jose scale	Lime sulfur	Safe	--	Liquid	24 gal.	Dormant	Do not apply lead arsenate when fruit is present.
	Mineral oil	Exempt	--	EC or emulsion	Superior oil 4 gal; other oil 6 gal.		
Two-spotted spider mite	Malathion	8	3	D, EC, or WP	2 lb.	When infestation appears and 7-10 days later.	
	Tepp	0	3	EC	0.4 lb.		
RASPBERRY							
Aphids	Malathion	8	1	D, EC, or WP	1 3/4 lb.	On foliage as needed.	Do not use parathion in home plantings; should be applied only by a trained operator.
	Parathion	1	15	D, EC, or WP	1/2 lb.		
Japanese beetle	Carbaryl	12	7	D or WP	2 lb.		
	DDT	7	--	D, EC, or WP	1 1/2 lb.		
	Malathion	8	1	D, EC, or WP	1 3/4 lb.		
Oblique-banded leaf roller	DDT	7	--	D, EC or WP	1 1/2 lb.	On foliage in Northwest when first blossoms appear.	
	TDE	7	14	D, EC, or WP	2 lb.		
Orange tortrix	TDE	7	14	D, EC, or WP	2 lb.	On lower canes and crowns; first week in October.	
Raspberry crown borer	Diazinon	--	--	EC	1/2 lb.	On foliage just before plants bloom; repeat rotenone in 2 weeks.	
	Parathion	1	15	EC or WP	3/4 lb.		
Red-necked cane borer	DDT	7	--	D, EC, or WP	1 1/2 lb.	On foliage when blossom buds appear and just before blossoms open.	
	Rotenone	Exempt	1	D, extract, or powder	1/4 lb.		
Raspberry fruitworm and raspberry sawfly	DDT	7	--	D, EC, or WP	1 1/2 lb.		
	Rotenone	Exempt	1	D, extract, or powder	1/4 lb.		

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
RASPBERRY (con.)							
Rose chafer	Carbaryl	12	7	D or WP	1 lb.	On foliage as needed.	Do not apply aldrin, chlordane, DDT, or dieldrin when fruit is present.
	DDT	7	--	D, EC, or WP	1½ lb.		
	Methoxychlor	14	3	D or WP	1¾ lb.		
Rose scale	Malathion	8	1	D, EC, or WP	1¾ lb.		Do not repeat soil application of aldrin, chlordane, or dieldrin for at least 3 years.
	Dormant oil	Exempt	--	EC	½ pt. EC/gal.	On dormant plants only.	
Spider mites	Kelthane	5	2	EC or WP	1 lb.	On foliage as needed.	
Stink bugs	Carbaryl	12	7	D or WP	2 lb.		
	DDT	7	--	D, EC, or WP	1½ lb.		
Strawberry weevil	DDT	7	--	D, EC, or WP	1½ lb.	On foliage when insects appear.	
	Methoxychlor	14	3	D or WP	1¾ lb.		
White grubs	Aldrin	--	--	EC or WP	2 lb.	Broadcast on soil and thoroughly work into upper 4-6 in.	
	Chlordane	0.3	--	EC or WP	10 lb.		
	Dieldrin	--	--	EC or WP	2 lb.		
STRAWBERRY							
Ants	Aldrin	0.1	--	EC or WP	5 lb.	To soil surface before planting and work into upper 6-8 in.	Do not apply aldrin, chlordane, or dieldrin when fruit is present.
	Chlordane	0.3	--	EC or WP	10 lb.		
	Dieldrin	0.1	--	EC or WP	3 lb.		
				Drench: 1 cup 40% WP or 4 fl. oz. 45% EC/100 gal.	100 gal. drench/ 1,000 sq. ft.	On soil as needed.	

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
STRAWBERRY (con.)							
Aphids							
On roots	Demeton	0.75	21	Dip: 1 pt. 25% EC/ 100 gal.		Dip plants before setting. Also treat soil for ants.	Do not use carbophenothion, demeton, methyl bromide, mevinphos, parathion, or tepp in home garden; should be applied only by a trained operator. Do not apply chlordane, DDT, or toxaphene when fruit is present. Do not reapply endosulfan within 15 days, or more than twice within a 35-day period when fruit is present.
On foliage	Carbophenothion	0.8	3	EC or WP	$\frac{1}{2}$ lb.	On foliage as needed.	
	Demeton	0.75	21	EC	4-6 oz.		
	Diazinon	0.75	5	EC or WP	1 lb.		
	Endosulfan	2	4	D, EC, or WP	$\frac{1}{2}$ -1 lb.		
	Malathion*	8	3	D, EC, or WP	1-2 lb.		
	Mevinphos	1	1	D, EC, or WP	1 lb.		
	Parathion*	1	14	D, EC, or WP	$\frac{1}{2}$ lb.		
	Tepp	0	3	D or EC	$\frac{1}{2}$ lb.		
Crown borers	Chlordane	0.3	--	D, EC, or WP	1 lb.		
	Toxaphene	7	--	D, EC, or WP	3 lb.		
Crown miner	DDT	7	--	D, EC, or WP	1-2 lb.		
Cutworms	DDT	7	--	D, EC, or WP	3 lb.	On soil as needed.	
	Toxaphene	7	--	D, EC, or WP 3% B	3 lb. 20 lb. B		
Cyclamen mite	Endosulfan	2	4	EC or WP	4 lb.	On foliage in 800 gal. of spray at high pressure. Do not repeat application at this rate within 35 days.	Apply methyl bromide only during dormant season and only on Shasta and Lassen varieties.
	Methyl bromide	30 (inorganic bromide)	--	Fumigant	109 lb.	Apply under tarpaulin according to manufac- turer's directions.	
	Hot water	--	--	--	--	To treat dormant plants, immerse in hot water (100 F.) for 20 min.	
Earwigs	Chlordane	0.3	--	D, EC, or WP	1 lb.	To infested soil in and adjacent to planting.	

* Do not use malathion or parathion where cyclamen mite is a problem.

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
STRAWBERRY (con.)							
Field cricket	Chlordane	0.3	--	3% B	40 lb. B	To soil surface in late after- noon after rain or irrigation.	Do not use carbophenothion, demeton, parathion, or tepp in home garden; should be applied only by a trained operator. Do not apply chlordane or DDT dust or spray when fruit is present. Do not apply tetradifon during fruiting period at intervals of less than 35 days.
	Malathion	8	3	D, EC, or WP	1-2 lb.	On foliage as needed.	
Flea beetles	DDT	7	--	D, EC, or WP	1-2 lb.		
	Methoxychlor	14	3	D or WP	1-1 $\frac{3}{4}$ lb.		
Lygus bugs	DDT	7	--	D, EC, or WP	1-2 lb.		
	Malathion	8	3	D, EC, or WP	1-2 lb.		
	Parathion	1	14	D, EC, or WP	$\frac{1}{2}$ lb.		
Mole crickets	Chlordane	0.3	--	3% B D, EC, or WP	40 lb. B 2 lb.	On soil as needed.	
Omnivorous leaf tier	Methoxychlor	14	3	5% D	1-1 $\frac{3}{4}$ lb.	On foliage as needed.	
Potato leafhopper	Malathion	8	3	D, EC, or WP	1-1 $\frac{1}{2}$ lb.		
	Parathion	1	14	D	$\frac{1}{2}$ lb.		
Slugs and snails	Metaldehyde + chlordane	None + 0.3	6	2.5% + 5% B	10 lb. B	Broadcast on soil late in day when damage is observed.	
	Metaldehyde + calcium arsenate	None + 3.5 combined As ₂ O ₃	6	2.5% + 5% B	10 lb. B		
Spider mites	Carbophenothion	0.8	3	D EC or WP	1.2 lb. $\frac{1}{2}$ lb.	On foliage as needed.	
	Demeton	0.75	21	EC	6 oz.		
	Diazinon	0.75	5	D EC or WP	1.2 lb. 1 lb.		
	Kelthane	5	2	D, EC, or WP	0.8 lb.		
	Malathion (home garden only)	8	3	D, EC, or WP	1-2 lb.		
	Tepp	0	3	D or EC	$\frac{1}{2}$ lb.		
	Tetradifon	5	3	D or EC	1 lb.		

BERRY INSECTS (continued)

BERRY INSECTS (continued)							
CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
STRAWBERRY (con.)							
Spittlebugs	Endosulfan	2	4	EC or WP	$\frac{1}{2}$ -1 lb.	On foliage when spittle masses are seen.	Do not use parathion in home garden; should be applied only by a trained operator.
	Malathion	8	3	D, EC, or WP	1-2 lb.		
	Methoxychlor	14	3	D or WP	$1\frac{3}{4}$ lb.		
Strawberry leaf beetle	DDT	7	--	D, EC, or WP	1-2 lb.		Do not apply aldrin, DDT, or toxaphene when fruit is present.
	Methoxychlor	14	3	D or WP	$1-1\frac{3}{4}$ lb.		
Strawberry leaf roller	Carbaryl	10	1	WP	2 lb.		
	Malathion	8	3	D, EC, or WP	$1-1\frac{1}{2}$ lb.		
	Parathion	1	14	D, EC, or WP	$\frac{1}{2}$ lb.		
	TDE	7	5	D, EC, or WP	2 lb.		
Strawberry root weevil	Aldrin	0.1	--	EC or WP	5 lb.	To soil surface before planting and work into upper 6-8 in.	Do not repeat soil application of aldrin, chlordane, or dieldrin for at least 3 years.
	Chlordane	0.3	--	EC or WP	10 lb.		
	Dieldrin	0.1	--	EC or WP	5 lb.		
	Malathion	8	3	D, EC, or WP	$1-1\frac{1}{2}$ lb.	On foliage as needed.	
	Parathion	1	14	D, EC, or WP	$\frac{1}{2}$ lb.		
	Strawberry weevil	DDT	7	--	D, EC, or WP		
Methoxychlor		14	3	D or WP	$1-1\frac{3}{4}$ lb.		
Sugarcane beetle	Aldrin	0.1	--	G	1 lb.	In new plantings when needed. Spread in 6-8 in. band in plant row.	
Thrips	Malathion	8	3	D, EC, or WP	1-2 lb.	On foliage as needed.	
	Toxaphene	7	--	D or EC	3 lb.		
Whiteflies	DDT	7	--	D, EC, or WP	1-2 lb.		
	Malathion	8	3	D, EC, or WP	$1-1\frac{1}{2}$ lb.		
	Parathion	1	14	D, EC, or WP	$\frac{1}{2}$ lb.		

BERRY INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
STRAWBERRY (con.)							
White grubs	Aldrin	0.1	--	EC, G, or WP	2 lb.	Broadcast on soil before planting and thoroughly work into upper 4-6 in.	Do not repeat soil application of aldrin, chlordane, DDT, or dieldrin for at least 3 years.
	Chlordane	0.3	--	EC, G, or WP	10 lb.		
	Dieldrin	0.1	--	EC, G, or WP	2 lb.		
Wireworms In East	Aldrin	0.1	--	EC, G, or WP	2-3 lb.	Broadcast on soil before planting and thoroughly work into upper 6-9 in.	
	Chlordane	0.3	--	EC, G, or WP	4-8 lb.		
	Dieldrin	0.1	--	EC, G, or WP	2-3 lb.		
In West	Aldrin	0.1	--	EC, G, or WP	5 lb.	Apply DDT at least 6 weeks before planting.	
	DDT	7	--	EC, G, or WP	10 lb.		
	Dieldrin	0.1	--	EC, G, or WP	3 lb.		
	Ethylene dibromide	5 (inorganic bromide)	--	83% soln. (12 lb./gal.)	36 lb.	Inject 8 in. into fallow soil every 12 in.	Do not apply within 3 weeks before planting.

FRUIT INSECTS

The recommendations for fruit insects are general and may need to be modified to apply to particular regions of the country. Consult your State Agricultural Experiment Station for recommendations applicable to your conditions.

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE							
Aphids, apple, apple grain, and rosy apple	Dinitroresol	0	--	EC or WP	0.6 lb.	Dormant.	Do not use demeton, parathion, phosphamidon, or tepp in small home plantings; should be applied only by a trained operator.
	Benzene hexachloride	5	60 *	WP	0.2 lb. gamma	Prepink or pink, or when aphids appear. Do not wait until leaves curl.	
	Lindane	10	60	WP	1/4 lb.		
	Demeton	0.75	21	EC (2 lb./gal.)	1/2-1 pt. EC		
	Diazinon	0.75	14	WP	1/4 lb.		
	Endosulfan	2	30	WP	1/2 lb.		
	Malathion	8	3	WP	1/2 lb.		Do not use parathion on McIntosh or related varieties.
	Parathion	1	14	WP	0.15 lb.		
	Phosphamidon **	--	60	EC (4 lb./gal.)	1/2 pt. EC		
	Tepp	0	3	20% EC	1/2-2/3 pt. EC		Do not make more than 3 applications of demeton.
Aphid, woolly apple	Benzene hexachloride	5	60 *	WP	0.2 lb. gamma	In first cover spray, if aphids are present; later applications may impart off-flavor to fruit.	Do not feed pomace from apples sprayed with endosulfan to livestock.
	Lindane	10	60	WP	1/4 lb.		
	Demeton	0.75	21	EC (2 lb./gal.)	3/4 pt. EC	When aphids appear; repeat if necessary.	
	Diazinon	0.75	14	WP	1/4 lb.		
	Endosulfan	2	30	WP	1/2 lb.		
	Malathion	8	3	WP	1/2 lb.		
	Parathion	1	14	WP	0.15 lb.		

* Or not after fruit starts to form.

** Not recommended in Northwest.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Apple flea weevil	DDT	7	30 *	WP	1 lb.	Prepink or pink.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	0.15 lb.		
Apple lace bug	Nicotine sulfate	2 (nicotine)	1	40% nicotine soln.	3/4 pt. soln. + hydrated lime 1 lb.	When lace bugs are present.	
Apple and thorn skeletonizer	DDT	7	30 *	WP	1 lb.	Once or twice early in spring when caterpillars appear.	Do not use parathion on McIntosh or related varieties.
	Lead arsenate	7 (combined lead)	40	Powder	2 lb. + hydrated lime 2 lb. or other safener		
Apple maggot						All materials after flies appear.	Remove excess residues of lead arsenate at harvest.
	DDT	7	30 *	WP	1 lb.	3-4 times 10 days apart.	
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener	2-3 times 10-14 days apart.	
	Lead arsenate + DDT	7 (combined lead) + 7	40	Powder + WP	3 + 1 lb.		
	Guthion	2	15	WP	0.3 lb.	3-5 times as needed, every 10 days beginning when flies appear.	
	Guthion + carbaryl	2 + 10	15	WP + WP	1/4 + 1/4 lb.		
	Methoxychlor	14	7	WP	1 lb.		
	Diazinon	0.75	14	WP	1/2 lb.		

* 40 days if used in more than 5 applications per season.

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Apple red bug	DDT	7	30 *	WP	1 lb.	Petal fall.	Do not use parathion in small home plantings; should be applied by a trained operator.
	Nicotine sulfate	2 (nicotine)	3	40% nicotine soln.	1 pt. soln.		
	Parathion	1	14	WP	0.3 lb.		
Bagworm	Carbaryl	10	1	WP	1 lb.	May or June when young bagworms appear.	Do not use parathion on McIntosh or related varieties.
	Chlordane	0.3	30	WP	1 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3-4 lb. + hydrated lime 3 lb. or other safener		
	Malathion	8	3	WP	3/4 lb.		Remove excess residues of lead arsenate at harvest.
	Parathion	1	14	WP	0.3 lb.		
Borer, roundheaded apple tree	DDT	7	30 *	WP	1 lb.	On trunks and foliage 3 weeks after petal fall and 2-3 weeks later.	Do not use carbaryl before 4 weeks after petal fall.
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
Borer, shot-hole	DDT	7	30 *	WP	1 lb.	When adults are active in May and September or after crop is harvested.	
	Parathion	1	14	WP	0.3 lb.		
Cankerworms, fall and spring	Carbaryl	10	1	WP	1 lb.	Pink.	
	DDT	7	30 *	WP	1/2 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Casebearers, cigar and pistol	DDT	7	30 *	WP	1 lb.	Pink and first cover spray.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
Codling moth Pacific Northwest	Carbaryl	10	1	WP	3/4 lb.	2-4 cover sprays, 3 weeks after petal fall and at 3-week intervals, as needed.	Do not use parathion on McIntosh or related varieties.
	DDT + parathion	7 + 1	30 *	WP + WP	1 + 1/2 lb.		
	DDT + malathion	7 + 8	30 *	WP + WP	1 + 1/2 lb.		
	Diazinon	0.75	14	WP	1/2 lb.		
	Guthion	2	15	WP	3/8 lb.		Do not use carbaryl before 4 weeks after petal fall unless used for thinning purposes.
Other areas	Carbaryl	10	1	WP	1/2 lb.	For first brood 3-4 times 10-14 days apart beginning about 10-14 days after petal fall; for second and third broods 1-3 times at similar intervals.	Use Guthion or carbaryl to control DDT-resistant strains and carbaryl for late applications to avoid excessive residues of other materials at harvest.
	DDT	7	30 *	WP	1 lb.		
	DDT + Guthion	7 + 2	30 *	WP + WP	12 + 2-4 oz.		
	DDT + malathion	7 + 8	30 *	WP + WP	3/4 + 1/2 lb.		
	DDT + parathion	7 + 1	30 *	WP + WP	0.75 + 0.075-0.15 lb.		
	Guthion	2	15	WP	3/8-1/2 lb.		
	Guthion + carbaryl	2 + 10	15	WP + WP	1/8 + 1/4 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
	Methoxychlor	14	7	WP	1 1/2 lb.		
	Parathion	1	14	WP	1/4 lb.		Use lead arsenate only to control light infestations or where it has been satisfactory; remove excess residues at harvest.
Climbing cutworms	DDT	7	30 *	WP	1 lb.	On trunk and about base of tree when opening buds are attacked.	
Eye-spotted bud moth	Guthion	2	15	WP	1/4 lb.	Delayed dormant to first cover and midsummer.	
	Malathion	8	3	WP	1/2 lb.		
	Parathion	1	14	WP	1/4 lb.		

* 40 days if used in more than 5 applications in a season.

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Fall webworm	DDT	7	30 *	WP	1 lb.	Midsummer, when webs are first noticed.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator. Do not use parathion on McIntosh or related varieties. Malathion EC may injure these varieties if used within 4 weeks of harvest.
	Guthion	2	15	WP	1/4 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	2 lb. + hydrated lime 2 lb. or other safener		
	Parathion	1	14	WP	0.3 lb.		
Fruitworms	DDT	7	30 *	WP	1 lb.	Petal fall or first cover.	Remove excess residues of lead arsenate at harvest.
	Guthion	2	15	WP	1/4 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
Grasshoppers	Aldrin	0.25	30	EC	4 oz.	Spray ground cover and fence rows with 100 gal./acre when hoppers become numerous.	Do not allow dairy or meat animals to graze on areas treated for grasshopper control with aldrin, dieldrin, or toxaphene. Do not use carbaryl before 4 weeks after petal fall.
	Carbaryl	10	1	WP	1 lb.		
	Dieldrin	0.25	45	WP	2 oz.		
	Parathion	1	14	WP	6 oz.		
	Toxaphene	7	40	60% EC	1/3 gal. EC		
Japanese beetle	Carbaryl	10	1	WP	1 lb.	When beetles appear; repeat in 10-14 days if needed.	Do not use rotenone near ponds or streams.
	DDT	7	30 *	EC or WP D	1 lb. 1 1/2 lb.		
	Methoxychlor	14	7	EC or WP	1 1/2 lb.		
	Malathion	8	3	EC or WP	1/2 lb.	When beetles appear; repeat every 7-10 days as long as needed.	
	Parathion	1	14	WP	0.3 lb.		
	Rotenone	Exempt	1	Powder	2 oz.		
Leafhoppers	DDT	7	30 *	WP	1/2 lb.	Once or twice when leafhoppers appear.	
	Guthion	2	15	EC or WP	1/4 lb.		
	Malathion	8	3	WP	1/2 lb.		
	Parathion	1	14	WP	0.15 lb.		

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Leaf roller, fruit-tree	Mineral oil	Exempt	--	EC or emulsion	Superior oil, 3 gal.	Dormant.	Do not use Guthion, parathion, or mevinphos in small home plantings; should be applied only by a trained operator.
	DDT	7	30 *	WP	1 lb.	When buds begin to separate or petal fall.	
	Guthion	2	15	EC or WP	1/4 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	4 lb. + hydrated lime 4 lb. or other safener		
	Parathion	1	14	WP	0.3 lb.	Petal fall and 10 days later.	
Leaf roller, red-banded	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener	Petal fall and first cover.	Do not use carbaryl before 4 weeks after petal fall.
	Guthion	2	15	WP	1/4-3/8 lb.	Petal fall and first cover and fifth or sixth cover.	
	Mevinphos	0.5	1	EC	1/4 lb.		
	Parathion	1	14	WP	0.3 lb.		
	TDE	7	30	WP	1 lb.	Petal fall and fifth or sixth cover.	
	Carbaryl	10	1	WP	1 lb.	Fifth and sixth cover.	
	Guthion + carbaryl	2 + 10	15	WP + WP	1/8 + 1/4 lb.		
Mite, apple rust	Carbaryl	10	1	WP	1 lb.	Once when mites appear.	
	Kelthane	5	7	EC or WP	3/8 lb.		

* 40 days if used in more than 5 small home plantings.

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Mites, clover and European red	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal. , other oil 3 gal.	Delayed dormant.	Do not use demeton or tepp in small home plantings; should be applied only by a trained operator.
	Fenson	--	--	WP	1/4 lb.	Prepink or pink.	
	Genite 923	--	--	EC or WP	12 oz.		
	Morestan	--	--	WP	1/4 lb.		
	Ovex	3	30	WP	2 oz.	Pink, petal fall.	Do not make more than 3 applications of demeton.
					4 oz.	In cover sprays as needed.	Do not apply fenson, Genite 923, or Morestan after edible parts begin to form; can be used on trees without a crop.
	Demeton	0.75	21	EC (2 lb./gal.)	1/2-1 pt. EC	Pink, petal fall.	After petal fall do not make more than 3 applications of tetradifon at 2 1/2 lb. / acre to trees with fruit.
	Aramite	0	--	WP	1/4 lb.	Cover sprays as needed on trees with no fruit.	
	Kelthane	5	7	EC or WP	6 oz.	2 cover sprays 7-10 days apart except, in West, in 1st or 2nd and in 3rd cover sprays.	Do not feed pomace from tetradifon-treated apples to livestock.
	Sulphenone	8	7	WP	1 lb.		
	Tepp	0	3	20% EC	1/2-2/3 pt. EC	2 cover sprays, 7 days apart.	Do not use tepp with lime.
	Tetradifon	5	1	WP	4 oz.	Petal fall or 1st cover, if prebloom control omitted; in later covers, 2 applications, as needed.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Mite, pear leaf blister All areas	Lime sulfur	Safe	--	Liquid	8 gal.	In fall when mites are migrating from leaves to buds or late in dormant season just as buds are swelling.	Do not use demeton or tepp in small home plantings; should be applied only by a trained operator.
	Mineral oil	Exempt	--	EC or emulsion	3 gal.	As buds are swelling.	Do not use demeton if phosphorus-resistant strains are present.
	Demeton	0.75	21	EC (2 lb./gal.)	1/2-1 pt. EC	In spring or summer when dormant spray was omitted or ineffective.	Do not make more than 3 applications of demeton.
	Diazinon	0.75	14	WP	1/2 lb.	In early fall after fruit is harvested.	After petal fall do not make more than 3 applications of tetradifon at 2 1/2 lb./acre to trees with fruit.
	Lime sulfur + wettable sulfur	Safe	--	Liquid + powder	4 gal. + 2 lb.		Do not feed pomace from tetradifon-treated apples to livestock.
	Lime sulfur + mineral oil	Safe + Exempt	--	Liquid + EC or emulsion	2 gal. + 3 gal.	As buds are swelling.	
Pacific Northwest							
Mites, two- and four-spotted spider, McDaniel, Schoeni, and others	Aramite	0	--	WP	1/4 lb.	Cover sprays as needed on trees with no fruit.	Do not use binapacryl with oil or EC and do not apply more than 4 times during a season.
	Kelthane	5	7	EC or WP	6 oz.	2 cover sprays 7-10 days apart except, in West, in 1st or 2nd and in 3rd cover sprays.	Do not use tepp with lime.
	Binapacryl	--	60	WP	4 oz.		
	Ovex *	3	30	WP	4 oz.	2-3 cover sprays 2-4 weeks apart.	
	Tepp	0	3	20% EC	1/2-2/3 pt. EC	2-3 cover sprays 7 days apart.	
	Tetradifon	5	1	WP	4 oz.	When infestation starts, 2 applications as needed.	

* Not effective against the two-spotted spider mite and the McDaniel mite in the Northwest.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Periodical cicada	Carbaryl	10	1	WP	1 lb.	Late May or early June when adults start emerging; repeat every 3-5 days as needed. Apply early in morning before cicadas become active.	Do not use Guthion, parathion, or tepp in small home plantings; should be applied only by a trained operator. Do not use parathion on McIntosh or related varieties. Malathion EC may injure these varieties if used within 4 weeks of harvest.
	Tepp	0	3	20% EC	1/2-2/3 pt. EC		
Plum curculio	Dieldrin	0.25	45	WP	1/4 lb.	Petal fall and once or twice more 7-10 days apart.	Do not use carbaryl before 4 weeks after petal fall. Do not use dieldrin later than 3 weeks after petal fall.
	Guthion	2	15	WP	1/4-3/8 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
	Methoxychlor	14	7	WP	1 1/2 lb.		
Scales, Forbes, Putnam, and San Jose All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal., other oil 3 gal.	Dormant or delayed dormant.	If no more than 2 applications of oil-ethion are made during fruiting period, it may be used to within 40 days of harvest. Remove excess residues of lead arsenate at harvest. Do not use tepp with lime.
	Superior oil-ethion	Exempt + 2	40	.15 lb. ethion/ gal. oil EC	2 gal. EC	Delayed dormant.	
	Carbaryl	10	1	WP	1/2 lb.	When crawlers are present; about second, sixth, and seventh covers.	
	Guthion	2	15	WP	1/4-3/8 lb.		
	Malathion *	8	3	WP	1/2-5/8 lb.		
	Parathion	1	14	WP	0.15 lb.		
Pacific Northwest	Mineral oil + lime sulfur	Exempt + Safe	--	EC or emulsion + liquid	2 gal. + 3 gal.	Dormant or delayed dormant.	
	Parathion	1	14	WP	1/4 lb.	Prepink.	

* Not effective in some areas.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Scales, oystershell and scurfy	DDT	7	30 *	WP	1 lb.	When eggs hatch, usually petal fall and first cover.	Do not use demeton, Guthion, parathion, or phosphamidon in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	0.3 lb.		
Tent caterpillars Eastern	Chlordane	0.3	30	WP	1 lb.	When caterpillars appear early in spring.	Do not use parathion on McIntosh or related varieties. Malathion EC may injure these varieties if used within 4 weeks of harvest. Remove excess residues of lead arsenate at harvest. Do not make more than 3 applications of demeton.
	DDT	7	30 *	WP	1 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
	Malathion	8	3	EC or WP	10-15 oz.		
	Methoxychlor	14	7	WP	1 lb.		
	Toxaphene	7	40	WP	1.2 lb.		
Western	DDT	7	30 *	WP	1 lb.	Just before bloom.	
Treehoppers Buffalo	DDT	7	30 *	WP	1/2 lb.	June and July cover sprays; spray ground cover as well as trees.	
General species	Mineral oil	Exempt	--	EC or emulsion	4 gal.	Dormant.	
Unspotted and spotted tentiform leaf miners	Demeton	0.75	21	EC (2 lb./gal.)	1 pt. EC	When first leaf miners appear. If heavy carryover is present, start at pink bud period.	
	Guthion	2	15	EC or WP	1/4 lb.		
	Malathion	8	3	WP	1/2 lb.		
	Parathion	1	14	WP	0.15 lb.		
	Phosphamidon	--	60	EC (4 lb./gal.)	1/2 pt. EC		

* 40 days if used in more than 5 applications in complete schedule; if further spraying is needed, use other than a chlorinated hydrocarbon.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
APPLE (con.)							
Yellow-necked and red-humped caterpillars	Malathion	8	3	WP	1/2 lb.	When young appear, usually July and August.	Do not use parathion in small home plantings; should be applied only by a trained operator. Do not use parathion on McIntosh or related varieties. Malathion EC may injure these varieties if used within 4 weeks of harvest.
	Parathion	1	14	WP	0.15 lb.		
APRICOT (See Peach)							
CHERRY							
Black cherry aphid	Dinitrobutylphenol	--	--	36% EC	1 qt. EC	Dormant.	Do not use parathion or tepp in small home plantings; should be applied only by a trained operator.
	Dinitrocresol	--	--	WP 20% EC	1 1/2 lb. 1 1/2 qt. EC		
	Diazinon	0.75	10	EC	1/2 lb.	When aphids appear, about time buds are breaking, and 10-14 days later, or in summer.	Restrict application of diazinon at over 4 lb./acre to post-harvest period. Do not apply endosulfan to cherries more than twice after shucks split and crop is present.
	Endosulfan	2	21	WP	3/8 lb.		
	Malathion	8	3	EC	1/2 lb.		
	Parathion	1	14	EC or WP	0.15 lb.		
	Tepp	0	3	20% EC	1/2 pt. EC		

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CHERRY (con.)							
Borer, lesser peach tree	Guthion	2	15	WP	1/2 lb.	To trunks and scaffold limbs 4 times at 3-week intervals, beginning with emergence in June. In Georgia twice for first brood (April and May) and again for second brood (August and September).	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator. Do not apply endosulfan to cherries more than twice after shucks split and crop is present.
	Malathion	8	3	WP	1 lb.		
	Parathion	1	14	WP	0.45 lb.		
Borer, peach tree	DDT	7	30	WP	3-4 lb.	In latitude of Virginia and northward, 2 times to trunks (July 1-15 and 3-4 weeks later); southward, 3 times (July 10-15 and after 3-4 week intervals); in south Georgia 4 times at 4-week intervals beginning August 1.	Do not make more than 8 applications of Guthion to cherries per season. Do not pour or spray ethylene dichloride onto trunk. Keep paradichlorobenzene crystals from touching tree.
	Endosulfan	2	21	WP	3/4 lb.		
	Guthion	2	15	WP	3/4 lb.		
	Parathion	1	14	WP	0.3 lb.		
	Ethylene dichloride	--	--	EC	1/8 pt. 7.5% emulsion per tree for 1-year trees to 1/2 pt. 20% emulsion for trees 4 years or older	To ground in ring around trunk in fall or first warm spell in spring.	
	Paradichlorobenzene	--	--	Crystals	1/4-1 1/2 oz. per tree depending on age and size	To ground in ring around trunk in late August or early September in North, to late October in South.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CHERRY (con.)							
Borer, shot-hole	DDT	7	30	WP	1 lb.	When adults are active in May and September.	Do not use parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	0.3 lb.		
Cherry fruitworm	Methoxychlor	14	7	WP	1 lb.	4 weeks after petal fall.	
Fruit flies, cherry and black cherry	Malathion	8	3	EC	1/2-5/8 lb.	Begin all treatments when first flies are trapped.	Restrict application of diazinon at over 4 lb./acre to post-harvest period.
	Methoxychlor	14	7	EC or WP	1 lb.	2-3 times 10 days apart.	
	Parathion	1	14	EC or WP	0.15-0.3 lb.		For materials with choice of EC or WP use EC in applications close to harvest.
	Diazinon	0.75	10	D EC	1 lb./acre 1/2 lb.	2-4 times 7 days apart.	
	Parathion + methoxychlor	1 + 14	14	EC or WP + EC or WP	0.15 lb. + 0.5 lb.	2-3 times 10 days apart.	Do not use rotenone near ponds or streams containing fish.
	Perthane	15	2	EC D	1 lb. 5 lb./acre		
	Rotenone	Exempt	1	4-5% powder D	2 lb. powder 0.3 lb./acre	2-4 times 7-10 days apart.	
Japanese beetle	Carbaryl	10	1	WP	1 lb.	When beetles appear; repeat at 10-14 day intervals as needed.	
	DDT	7	30	EC or WP D	1 lb. 1 1/2 lb.		
	Methoxychlor	14	7	EC or WP	1 1/2 lb.		

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FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CHERRY (con.)							
Japanese beetle (con.)	Malathion	8	3	EC	1/2 lb.	When beetles appear; repeat at 7-10 day intervals as needed.	Do not use carbophenothion, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	0.3 lb.		
	Rotenone	Exempt	1	Powder	2 oz.		
Mites, European red and two-spotted spider	Ovex*	--	--	WP	1/4 lb.	2 times 7-10 days apart as needed, post-harvest.	For materials with choice of EC or WP use EC in applications close to harvest.
	Carbophenothion	0.8	30	WP	1/4 lb.	2 times 7-10 days apart as needed.	Do not use rotenone near ponds or streams containing fish.
	Guthion	2	15	WP	1/4-3/8 lb.		
	Parathion	1	14	WP	0.3 lb.		
	Tetradifon	5	1	WP	4 oz.	As needed.	Do not repeat use of Kelthane within 30 days.
	Kelthane	5	7	WP	0.28-0.37 lb.		
Mites, plum nursery	Endosulfan	2	21	WP	1/2 lb.	When mites first appear; repeat if necessary.	After shuck-split limit use of tetradifon to 2 applications at 1 lb./acre, or 1 application at 2 lb./acre.
	Kelthane	5	7	WP	0.28 lb.		
Pandemis moth	DDT + parathion	7 + 1	30	WP + WP	1 lb. + 0.08 lb.	Just before bloom.	Do not use more than 2 applications of endosulfan after shuck-split.
	Parathion	1	14	EC or WP	1/4 lb.	7-10 days after petal fall.	
Pear slug	DDT	7	30	WP	1 lb.	15-20 days after bloom or later when slugs appear.	Do not use ovex until after harvest.
	Lead arsenate	7 (combined lead)	30	Powder	2 lb. + hydrated lime 2 lb. **		
	Parathion	1	14	WP	1/4 lb.		

* Not effective against the two-spotted spider mite in the Northwest.

** 1 lb. of each material on English Morello variety.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CHERRY (con.)	DDT	7	30	WP	1 lb.	When buds show green and if needed when they show white and just after bloom.	Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
Pear thrips							
Plum curculio	Dieldrin	0.25	45	WP	1/4 lb.	2-3 times 8-10 days apart, beginning at petal fall or shuck split.	
	EPN	3	21	WP	1/4-3/8 lb.		
	Guthion	2	15	WP	1/4-1/3 lb.		
	Lead arsenate	7 (combined lead)	30	Powder	2-3 lb. + hydrated lime 2-3 lb. *		
	Methoxychlor	14	7	WP	1 1/2 lb.		
	Parathion	1	14	WP	0.3 lb.		
Rose chafer	Carbaryl	10	1	WP	1 lb.	When present.	
	Methoxychlor	14	7	WP	1 lb.		
	Parathion	1	14	WP	0.3 lb.		
Scales, San Jose and Forbes Pacific Northwest	Parathion	1	14	WP	1/4 lb.	Prebloom.	
	All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal. , other oil 3 gal.	
Carbaryl		10	1	WP	1/2 lb.	3 weeks before and immediately after harvest.	
Malathion **		8	3	EC	1/2-5/8 lb.		
Parathion		1	14	WP	0.08-0.15 lb.		

* 1 lb. of each material on English Morello variety.

** Not effective in some areas.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS							
Aphids California and Arizona	Nicotine sulfate	2 (nicotine)	3	40% nicotine soln.	3/4 pt. soln. + casein spreader 1/2 lb.	As needed.	Do not use demeton, mevinphos, or tepp in small home plantings; should be applied only by a trained operator.
	Rotenone extract	Exempt	1	EC (2-3% rotenone)	1 pt. EC		
	Petroleum oil + rotenone *	Exempt	1	EC or emulsion + EC or WP	1/2-1 gal. + 1/2-3 lb.		Limit demeton application to oranges, lemons, and grapefruit.
	Demeton	0.75	21	EC	1/8 lb. as outside coverage 1 lb./acre as mist spray		Limit mevinphos application to oranges, lemons, and grapefruit. Do not repeat application within 7 days.
	Malathion	8	7	EC or WP	3/8 lb. as outside coverage 2.5-3 lb./acre as mist spray	As needed but not during bloom.	Do not use sulfur near picking time or when temperatures of 100° F. or higher are expected within a week. Do not apply within 2 months of an oil spray.
	Mevinphos	0.25	1	EC	1/16 lb. as thorough coverage 1/2 lb./acre as mist spray		
	Tepp	0	3	Soln.	0.8 pt.		Do not use malathion on citrus citron.
Citrus thrips California and Arizona	Sulfur	Safe	--	D	100 lb./acre	3 applications: First, prebloom in February or March; second, at petal fall; third, 2-4 weeks later.	

Continued on page 123

* Prepare and use mixtures according to manufacturer's directions.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							
Citrus thrips (con.) California and Arizona (con.)	DDT 2% + sulfur at least 85%	7 + Safe	30	D	100 lb./acre	At petal fall. Second application in 2-4 weeks if necessary.	Do not use parathion in small home plantings; should be applied only by a trained operator. Do not apply more than 2 1/2 lb. tartar emetic per acre per application. Do not apply dioxathion more than twice a year to lemons and limes and allow at least 4 months between applications. On oranges, grapefruit, tangelos, and tangerines, make applications at least 3 months apart if fruit is present during first application. Do not use dieldrin on citrus citron, or dioxathion on citrus citron or kumquats.
	Tartar emetic (nonresistant thrips only)	3.5	30	Soln.	1 1/2-3 lb. + sugar 1 1/2-3 lb./20-50 gal. water as mist spray/acre	At petal fall and in summer. Apply higher dosage in summer.	
	DDT (nonresistant thrips only)	7	30	WP	2-4 lb./100-200 gal./acre as mist spray	Use higher dosage in desert regions.	
	Dieldrin	0.25	30	EC or WP	1/2 lb./100-200 gal. /acre as mist spray (Airplane application, 10-15 gal./acre)	At petal fall and in summer.	
	Dioxathion	2.8	--	EC	2 lb./100-300 gal. as mist spray/acre	At petal fall.	
	Parathion	1	14	EC or WP	1.5 lb./100-200 gal./acre as mist spray (Airplane application, 10-15 gal./acre)	At petal fall. Only as emergency treatment in California.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							
Mite, citrus red California *	Mineral oil, light medium or medium	Exempt	--	EC or emulsion	1 3/4 gal.	On oranges and grapefruit; medium oil in August and September; light medium in September and October. On lemons: medium oil in April and May; and/or September-December.	Do not use carbophenothion in small home plantings; should be applied only by a trained operator. Use mineral oil only as emergency treatment on navel oranges.
	Ovex **	5	15	WP	3/8 lb. as thorough coverage 4 lb./acre as mist spray	As mites appear.	Apply tetradifon only once to fruit per year.
	Tetradifon **	2	--	WP	1/4 lb. as thorough coverage 2 1/2 lb./acre as mist spray		Do not apply DN-111 during or just preceding high temperatures.
	DN-111	1	15	WP	1/5 lb.		Do not apply dioxathion more than twice a year to lemons and limes and allow at least 4 months between applications. On oranges, grapefruit, tangelos, and tangerines, make applications at least 3 months apart if fruit is present during first application.
	Kelthane	10	7	EC	3/8 lb. as thorough coverage 3 lb./acre as mist spray		
	Dioxathion	2.8	--	EC	3/8 lb. as thorough coverage 4 lb./acre as mist spray		
	Carbophenothion	2	30	WP	3/8 lb.		Do not use ovex on citrus citron, kumquats, limes, or tangelos; tetradifon on kumquats; or dioxathion on citrus citron or kumquats.
Mites, citrus red, Texas citrus, and six spotted Florida	Carbophenothion	2	14	EC or WP	1/4-3/8 lb.	Post bloom, late spring, fall, winter. Preferred use is in late fall and winter for combined control of rust mite and spider mites.	Allow at least 30 days before harvest when carbophenothion is used with oil. Do not use carbophenothion with oil on grapefruit in summer or fall.
Continued on page 125	Dioxathion	2.8	--	EC	1/4 lb.	Fall, winter.	

* In many areas the citrus red mite is resistant to ovex, tetradifon, Kelthane, dioxathion, and carbophenothion.
 ** Add DN 111, 3/5 lb./acre, or chlorobenzilate, 1 1/2 lb./acre, if many adult mites are present.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)	Ethion Kelthane Tetradifon Oil	2	1	EC or WP	1/4 lb.	Fall, winter.	Limit use of ethion to 1 application not later than 21 days before harvest on lemons and to 2 applications per crop on tangerines. Do not repeat application within 90 days on grapefruit, oranges, tangelos, and tangerines. Do not use Kelthane in highly alkaline sprays. Do not apply oil to trees near wilting, to drought-stricken trees, or to fruit less than 3 in. in diameter. Allow 4 weeks between oil sprays and sulfur. Do not apply oil within 6 weeks of harvest or later than September 15.
Mites, citrus red, Texas citrus, and six spotted (con.) Florida (con.)		10	7	EC	1/4-3/8 lb.	Late spring, fall, winter.	
		2	--	WP	1/8 lb.	Fall.	
		Exempt	--	Emulsion	0.7 gal.	Post bloom, June 1-July 15.	
Mites, Texas citrus and false spider Texas	Kelthane Oil	10	7	EC	1/4 lb.	Post bloom and fall.	Do not apply tetradifon more than once per season when fruit is present.
		Exempt	--	EC or emulsion	1.6 gal.	June 1-September 15.	
Mite, Texas citrus Texas	Tetradifon	2	--	WP	1/4 lb.	Post bloom or fall.	Limit use of chlorobenzilate to oranges, grapefruit, lemons, and tangerines; do not apply over 2 1/2 lb./acre per application to grapefruit and tangerines, 5 lb./acre to oranges, and 7 1/2 lb./acre to lemons.
Mite, false spider Texas	Chlorobenzilate	5	--	WP	1/2 lb.	Summer.	Do not use ethion on limes or tetradifon on kumquats. Do not mix zineb and copper compounds.
Mite, citrus rust Florida	Zineb	7	--	WP	3/4 lb.	Post bloom, summer.	
	Chlorobenzilate	5	--	EC or WP	1/8 lb.	Post bloom, summer, fall.	
	Sulfur	Safe	--	Wettable D	5 lb. 40-100 lb./acre	Post bloom, summer.	

Continued on page 126

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							
Mite, citrus rust (con.) Florida (con.)	Carbophenothion	2	14	EC or WP	1/4-3/8 lb.	Post bloom, late spring, fall, or winter. Preferred use is in late fall and winter for combined control of rust mite and spider mites.	Do not use carbophenothion in small home plantings; should be applied only by a trained operator. Apply carbophenothion at least 30 days before harvest when used with oil. Do not use with oil on grapefruit in summer or fall. Do not use dioxathion on citrus citron or kumquats or more than twice a year on lemons and limes. Allow at least 4 months between applications. On oranges, grapefruit, tangelos, and tangerines, make appli- cations at least 3 months apart if fruit is present during first application. Limit use of ethion to 1 appli- cation not later than 21 days before harvest on lemons and to 2 applications per crop on tangerines. Do not use on limes or repeat application within 90 days on grapefruit, oranges, tangelos, and tangerines. Do not use sulfur and zineb, or sulfur, within 4 weeks of oil, or oil when soil is very dry or temperature unusually high. Limit use of chlorobenzilate to oranges, grapefruit, lemons, and tangerines; do not apply over 2 1/2 lb./acre per appli- cation to grapefruit and tangerines, 5 lb./acre to oranges, and 7 1/2 lb./acre to lemons.
	Dioxathion	2.8	--	EC	1/4 lb.	Fall, winter.	
	Ethion	2	1	EC or WP	1/4 lb.		
Mite citrus rust Texas	Zineb	7	--	WP	3/4 lb.	Post bloom, before fruit is 1/2 in. in diameter, and in summer and fall if needed.	
	Sulfur + zineb	Safe + 7	--	Wettable + WP	10 lb. + 3/4 lb.		
	Sulfur	Safe	--	D	50-80 lb./acre	Post bloom and later when needed.	
	Chlorobenzilate	5	--	WP	1/2 lb.	Summer.	
Mite, citrus bud California	Mineral oil, light medium	Exempt	--	EC or emulsion	1 3/4 gal.	September-November and April-May.	
	Mineral oil, light medium + chlorobenzilate	Exempt + 5	--	EC or emulsion + EC or WP	1 3/4 gal. + 1/8 lb.	When needed.	
	Chlorobenzilate	5	--	EC or WP	1/8 lb. as thorough coverage 1.5 lb./acre as mist spray	When needed, preferably July-September.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
Scale, black California	Mineral oil, light medium to medium	Exempt	--	EC or emulsion	1 3/4 gal.	As soon as practicable after completion of major hatch of scale. Oranges, August-October. Lemons, early spring and/or August-December.	Use mineral oil only as emergency treatment on navel oranges.
	Mineral oil, light to light medium + rotenone	Exempt	1	EC or emulsion + WP, or proprietary mixtures	1 1/4-1 3/4 gal. + .025 lb.	When treatment has been delayed and advanced stages of scale are present.	Do not apply oil if trees are near wilting; allow 3 weeks between sulfur and oil sprays; and do not apply to fruit 3/4-1 1/2 in. in diameter or after July.
	Mineral oil, light or light medium + malathion	Exempt + 8	7	EC or emulsion + EC or WP	1 3/4 gal. + 1/4 lb.		Do not apply oil within 6 weeks of harvest or later than September 15, to drought-stricken trees.
	Parathion	1	30	EC or WP	3/8 lb.	Within one month following completion of major hatch of scale, provided brood is very even.	Do not apply oil when soil is very dry or temperature unusually high.
	Parathion + malathion	1 + 8	30	EC or WP	1/4 + 3/8 lb.		Do not make more than 2 applications of Guthion per year. When 2 applications are made, allow 28 days from last application to harvest.
	Malathion	8	7	EC or WP	3/4 lb.		Do not use malathion on citrus citron.
	Kerosene (horticultural grade) + DDT	Exempt + 7	30	Liquid + WP + blood spreader	1 1/2 gal. + 3/4 lb.	When treatment has been delayed and advanced stages of scale are present.	Do not apply kerosene during bloom.
							Limit use of ethion to 1 application on lemons and 2 applications per crop on tangerines. Do not repeat application within 90 days on grapefruit, oranges, tangelos, and tangerines.
Florida	Ethion + oil	2 + exempt	30 *	EC + emulsion	3/8 lb. + 0.7 gal.	Post bloom; June 1-July 15.	
	Guthion	2	7	EC or WP	1/4-1/2 lb.	Post bloom or mid May, on all varieties.	
	Parathion	1	14	EC or WP	1/4 lb.	Mid May on all varieties.	
	Parathion + oil	1 + exempt	14	EC or WP + emulsion	0.15 lb. + 0.5 gal.	Mid May on grapefruit.	

* 21 days on lemons.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							
Scale, brown soft Texas	Carbaryl *	10	5	WP	1 lb.	Not during bloom.	Do not use parathion in small home plantings; should be applied only by a trained operator.
	Oil + carbaryl	Exempt + 10	5	EC or emulsion + WP	1.6 gal. + .48 lb.	June 1-September 15.	Do not apply carbaryl more than once to citrus other than grapefruit when fruit is present.
Scales, California red, chaff and others Texas	Oil	Exempt	--	EC or emulsion	1.6 gal.	June 1-September 15.	Do not apply oil if trees are near wilting; allow 3 weeks between sulfur and oil sprays; and do not apply to fruit 3/4-1 1/2 in. in diameter or after July.
Scales, California red, purple, and yellow California	Mineral oil, light medium or medium	Exempt	--	EC or emulsion	1 3/4 gal.	On oranges and grapefruit August 1-October 31 in southern California; July 1-September 15 in central California. On lemons, April-May and/or September-December in southern California; September-November in central California.	Do not apply oil within 6 weeks of harvest or later than September 15, to drought-stricken trees.
	Mineral oil, light or light medium, + malathion	Exempt + 8	7	EC or emulsion + EC or WP	1 3/4 gal. + 1/4 lb.		Do not apply oil when soil is very dry or temperature unusually high.
	Parathion	1	30	EC or WP	3/8-5/8 lb.	Anytime except during bloom and before new fruit reaches 1/3 in. in diameter.	Light medium oil preferred for oranges. Use only as emergency treatment on navel oranges.
	Parathion + malathion	1 + 8	30	EC or WP	1/4 + 3/8 lb.		Do not apply malathion during bloom.
	Malathion	8	7	EC or WP	3/4-1 lb.		Do not use malathion on citrus citron.
Scales, glover, purple, Florida red, yellow, and chaff Florida Continued on page 129	Parathion	1	14	EC or WP	1/4 lb.	When needed.	

* Increase of spider mites has followed the use of carbaryl.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CITRUS (con.)							
Scales, glover, purple, Florida red, yellow, and chaff (con.) Florida (con.)	Oil	Exempt	--	Emulsion	1.3 gal.	Post bloom, June 1-July 15.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator. Do not apply oil if trees are near wilting; allow 3 weeks between sulfur and oil sprays and do not apply to fruit 3/4-1 1/2 in. in diameter.
	Ethion + oil	2 + exempt	30*	EC + emulsion	3/8 lb. + 0.7 gal.		
	Parathion + oil	1 + exempt	14	EC or WP + emulsion	0.15 lb. + 0.7 gal.	June 1-July 15.	
	Malathion + oil	8 + exempt	7	EC or WP + emulsion	1/2-3/4 lb. + 0.7 gal.		
	Malathion	8	7	EC or WP	3/4-1 1/4 lb.	When needed.	
Scale, snow** Florida	Oil	Exempt	--	EC or emulsion	1.3 gal.	June 1-July 15.	Limit use of ethion to 1 application on lemons and to 2 applications on tangerines. Do not repeat applications within 90 days on grapefruit, oranges, tangelos, or tangerines. Do not make more than 2 applications of Guthion per year. When 2 applications are made, allow 28 days from last application to harvest. Do not use malathion on citrus citron.
	Guthion	2	7	WP	1/4-1/2 lb.	Post bloom, summer.	
	Parathion	1	14	EC or WP	1/4 lb.		
	Parathion + oil	1 + exempt	14	EC or WP + emulsion	0.15 lb. + 0.7 gal.	June 1-July 15.	
	Malathion + oil	8 + exempt	7	EC or WP + emulsion	3/4 lb. + 0.5 gal.	June to July.	
	Ethion + oil	2 + exempt	30*	EC + emulsion	3/8 lb. + 0.7 gal.	Post bloom, June 1-July 15.	
	Malathion	8	7	EC or WP	1 1/4 lb.	Post bloom, summer.	
Whiteflies Florida	Oil	Exempt	--	EC or WP	1.3 gal.	June 1-July 15.	
	Parathion	1	14	EC or WP	1/4 lb.	Post bloom, summer.	

* 21 on lemons.

** Complete coverage of trunks and branches is necessary for control of snow scale.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRAPE							
Climbing cutworms	DDT	7	40	WP	1 lb.	As buds are swelling.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
				10% D	Small handful	To lower part of vine and ground as buds are swelling.	
European fruit lecanium	Malathion	8	3	EC (5 lb./gal.)	1 1/2 pt. EC	When newly hatched nymphs are migrating over vines, usually shortly after bloom.	Limit use of Guthion to 3 applications per season.
	Parathion	1	14	WP	0.15 lb.		
Grape berry moth	Carbaryl	10	1	WP	1 lb.	At petal fall, 7-14 days later, when second-brood eggs are found (35-45 days after bloom), and 14 days later.	Malathion EC may injure the Ribier, Italia, Cardinal, and Almeria varieties if applied after clusters appear.
	DDT	7	40	WP	3/4 lb. + sticker		
	DDT + parathion	7 + 1	40	WP + WP	0.75 + 0.15 lb.		
	Diazinon	0.75	10	WP	1/2 lb.		
	Guthion	5	1	WP	1/4 lb.		Do not use a sticker with DDT if application is made after grapes reach buckshot stage.
	Methoxychlor	14	14	WP	1 lb.		
	Methoxychlor + parathion	14 + 1	14	WP + WP	1 + 0.15 lb.		
	Parathion	1	14	WP	0.15 lb.		
	Parathion + carbaryl	1 + 10	14	WP + WP	0.15 lb. + 1 lb.		
Grape cane girdler	Guthion	5	1	WP	1/4 lb.	When first girdles are seen.	
Grape flea beetle	DDT	7	40	WP	1 lb.	Early spring when buds begin to swell, if adults appear, or when shoots are 6-8 in. long if larvae are present.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRAPE (con.)	DDT	7	40	WP	3/4 lb.	When adults or small larvae appear. Schedule for grape berry moth gives control.	Do not use parathion in small home plantings; should be applied only by a trained operator. Do not use a sticker with DDT if application is made after grapes reach buckshot stage. Do not use lindane later than 1 month after bloom. Malathion EC may injure the Ribier, Italia, Cardinal, and Almeria varieties if applied after clusters appear. Endosulfan may cause severe injury to Concord variety.
Grape leaf folder							
Grape leafhopper	DDT	7	40	WP	3/4 lb.	Petal fall and 7-14 days later.	
	Endosulfan	2	7	WP	1/2 lb.	When leafhoppers appear.	
Grape mealybug	Malathion	8	3	EC (5 lb./gal.)	1 1/2 pt. EC	When overwintered nymphs move out from under bark to base of buds or onto grape clusters (just before or after bloom); repeat in 10 days if needed.	
	Parathion	1	14	WP	0.3 lb.		
Grape phylloxera (leaf form only)	Lindane	10	--	WP	1/2 lb.	When galls first appear on leaves; repeat in 7-10 days.	
Grape rootworm	DDT	7	40	WP	3/4 lb.	Petal fall and 7-14 days later.	
Grapevine aphid	Nicotine sulfate	2 (nicotine)	1	40% nicotine soln.	1 pt. soln. with soap or bordeaux	When aphids appear on shoots.	
	Parathion	1	14	WP	0.15 lb.		
Japanese beetle	Carbaryl	10	1	WP	1 lb.	When beetles appear; repeat 10-14 days later if needed.	
	DDT	7	40	EC or WP D	1 lb. 1 1/2 lb.		
	Methoxychlor	14	14	EC or WP	1 1/2 lb.		

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FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
GRAPE (con.)							
Japanese beetle (con.)	Malathion	8	3	EC or WP	1/2 lb.	When beetles appear; repeat every 7-10 days as long as needed.	Do not use parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	0.3 lb.		
	Rotenone	Exempt	1	Powder	2 oz.		
Leaf-eating caterpillars	DDT	7	40	WP	1 lb.	If program for grape berry moth is not effective, apply when caterpillars appear.	Do not use rotenone near ponds or streams containing fish. Do not apply lead arsenate after fruit begins to form.
	Lead arsenate	7 (combined lead)	--	Powder	3 lb.		
Red-banded leaf roller	Lead arsenate	7 (combined lead)	--	Powder	3 lb.	Just before bloom.	Do not use a sticker with DDT if application is made after grapes reach buckshot stage. Malathion EC may injure the Ribier, Italia, Cardinal, and Almeria varieties if applied after clusters appear. Do not apply tetradifon more than 3 times during fruiting period.
	Carbaryl	10	1	WP	1 lb.	Just before bloom or at petal fall and for early stages of first and second broods.	
	Parathion	1	14	WP	0.3 lb.		
Rose chafer	DDT	7	40	WP	1 lb.	When adults first appear, usually near bloom of Concord grapes.	
	Methoxychlor	14	14	WP	1 lb.		
Two-spotted spider mite	Kelthane	5	7	EC or WP	3/8 lb.	When mites first appear, and 7 days later if infestation is heavy.	
	Malathion	8	3	WP EC (5 lb./gal.)	1/2 lb. 1 1/2 pt. EC		
	Parathion	1	14	WP	0.15 lb.		
	Tetradifon	5	1	WP	1/4 lb.		
MANGO AND PASSION FRUIT							
Oriental fruit fly and melon fly	Malathion	8	2	WP	Per acre Conventional power sprayer: 3/4 + 1 lb. protein hydrolysate /20-100 gal. Air- plane or mist blower: 1/2-3/4 + 1 lb. protein hydrolysate/1-15 gal.	Every 10-14 days while flies are on fruit.	

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH							
Aphids, green peach, black cherry, black peach, rusty plum	Demeton	0.75	30	EC (2 lb./gal.)	1 pt. EC	Early in season when aphids appear.	Do not use demeton, EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Endosulfan	2	30	WP	1/2 lb.		
	Malathion	8	7	EC or WP	1/2 lb.		
	Nicotine sulfate	2 (nicotine)	3	40% nicotine soln.	3/4 pt. soln. + soap or hydrated lime		
	Parathion	1	21	WP	1/4 lb.		
Borer, American plum	DDT	7	30	WP	1/2 lb.	3-4 times at 21-day intervals, beginning in June.	Do not apply endosulfan more than 2 times during fruiting period; do not allow animals to graze in treated orchards.
	EPN	3	21	WP	1/2 lb.		
	Guthion	2	21	EC or WP	1/3 lb.		
	Parathion	1	21	WP	5 oz.		
Borer, lesser peach tree	Guthion	2	21	WP	1/3 lb.	To trunks and scaffold limbs 4 times in the Northeast at 3-week intervals, beginning with emergence in May. In Georgia twice 4 weeks apart, for first brood (April and May) and for second brood (August and September).	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	Malathion	8	7	WP	1 lb.		
	Parathion	1	21	WP	5 oz.		
	Endosulfan	2	30	WP	3/4 lb.	To trunks and main branches when adults appear and again as recommended in first application for peach tree borer.	

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FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Borer, lesser peach tree (con.)	Paradichloro- benzene + mineral oil * or crude cottonseed oil	--	--	Crystals + oil	1 lb. + 2 qt. (undiluted)	Paint infested areas in fall or in spring after weather is warm.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
Borer, peach tree All areas	DDT	7	30	WP	3-4 lb.	In latitude of Virginia and northward twice to trunks (July 1-15 and 3-4 weeks later); southward 3 times (July 10-15 and after 3-4 week intervals); in south Georgia 4 times at 4-week intervals beginning August 1.	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	Guthion	2	21	EC or WP	1/3 lb.		
	Parathion	1	21	WP	5 oz.		
	Parathion + DDT	1 + 7	30	WP	5 oz. + 2 lb.		
Southern States	Paradichloro- benzene	--	--	Crystals	1/4-1 1/2 oz. per tree, depending on age and size	To ground in ring around trunk in late August or early September in North to late October in South.	Do not apply paradichloro- benzene to healthy tissue or when fruit is present.
	Endosulfan	2	30	WP	5 lb.	Dip roots of nursery trees prior to planting.	Keep paradichlorobenzene crystals from touching trees.
	Endosulfan	2	30	WP	3/4 lb.	To trunks from ground to scaffold limbs immedi- ately after harvest and repeat 3-4 weeks later.	Do not make more than 1 application of DDT within 6 weeks of harvest.
Other States	Endosulfan	2	30	WP	3/4 lb.	To trunks from ground to scaffold limbs when emergence starts and again 3 weeks later.	
Borer, peach twig	DDT	7	30	WP	1 lb.	Prepink or petal fall and 10 days later if needed.	
Continued on page 135	Guthion	2	21	EC or WP	4 oz.		

* Do not use mineral oil in the South.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Borer, peach twig (con.)	DDT + parathion	7 + 1	30	WP + WP	1 + 1/4 lb.	Prepink or petal fall and 10 days later if needed.	Do not use parathion in small home plantings; should be applied only by a trained operator. Do not make more than 2 applications of endosulfan while fruit remains on tree; do not allow animals to graze in treated orchards.
	Endosulfan	2	30	WP	1/2 lb.	Just before bloom and at petal fall.	
	Lead arsenate (basic)	7 (combined lead)	30	Powder	3 or 4 lb.		
Borers, shot-hole, and peach bark beetle	DDT	7	30	WP	1 lb.	When beetles are active in late May or June and in September after crop is harvested.	Do not make more than 1 application of DDT within 6 weeks of harvest. Do not allow dairy or meat animals to graze on areas treated for grasshopper control with aldrin, dieldrin, or toxaphene.
	DDT + parathion	7 + 1	30	WP + WP	1/2 + 1/4 lb.		
	Parathion	1	21	WP	5 oz.		
Climbing cutworms	DDT	7	30	10% D	Small handful per tree	On lower trunk and surrounding soil in early spring when cutworms appear.	
Earwigs	DDT	7	30	10% D	Thorough coverage	To trunk and surrounding soil a month before fruit ripens.	
Grasshoppers	Aldrin	0.1	21	EC	4 oz.	Spray ground cover and fence rows with 100 gal./ acre when grasshoppers become numerous.	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	Carbaryl	10	3	WP	1 lb.		
	Dieldrin	0.1	45	EC or WP	2 oz.		
	Parathion	1	21	EC or WP	5 oz.		
	Toxaphene	7	40	60% EC	1/3 gal. EC		
Green June beetle	Carbaryl	10	3	WP	1 lb.	When adults appear on fruit.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Japanese beetle	Carbaryl	10	3	WP	1 lb.	When beetles appear; repeat after 10-14 days if needed.	Do not use carbophenothion, demeton, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	DDT	7	30	EC or WP	1 lb.		
				D	1 1/2 lb.		
	Malathion	8	7	EC or WP	1/2 lb.		
	Methoxychlor	14	21	EC or WP	1 1/2 lb.		
	Parathion	1	21	WP	5 oz.		
	Rotenone	Exempt	1	Powder	2 oz.	When beetles appear; repeat every 7-10 days as needed.	Do not repeat applications of Kelthane within 30 days.
Leaf rollers, red- banded and <u>Platynota flavedana</u>	Carbaryl	10	3	WP	1 lb.	When leaf rollers become active, about July 1.	After shuck split do not make more than 1 application of tetradifon at 2 lb. or 2 applications at 1 lb. per acre.
	Guthion	2	21	WP	0.3 lb.		
	Parathion	1	21	WP	5 oz.		
	TDE	7	30	WP	3/4 lb.		
Mites, European red and two-spotted spider	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal., other oil 3 gal.	Dormant.	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	Ovex	3	30	WP	1/4 lb.	At shuck split and first cover.	
	Tetradifon	5	1	WP	1/4 lb.	At shuck split or in summer; 1 or 2 applications as required.	
	Carbophenothion	0.8	30	WP	1/4 lb.	In summer; repeat after 7-10 days if needed.	
	Demeton	0.75	30	EC (2 lb./gal.)	1 pt. EC		
	Kelthane	10	14	EC or WP	0.28-0.37 lb.		

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Oriental fruit moth Pacific Northwest	Carbaryl	10	3	WP	3/8 lb.	At shuck split, 10-12 days later and, if needed, 6 and 3 weeks before harvest of varieties ripening 10-15 days before standard Elberta and thereafter.	Do not use EPN, Guthion, parathion, or tepp in small home plantings; should be applied only by a trained operator. Do not make more than 1 application of DDT within 6 weeks of harvest. Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	DDT	7	30	WP	1 lb.		
	Guthion	2	21	EC or WP	1/4 lb.		
	Parathion	1	21	WP	5 oz.		
Other areas	Carbaryl	10	3	WP	1 lb.	3 times at 10-day intervals beginning at shuck split; or for DDT at 8 and 4 weeks before harvest and for other materials at 6 and 2-3 weeks before harvest.	
	DDT	7	30	WP	1 lb.		
	EPN	3	21	WP	3/8 lb.		
	Guthion	2	21	EC or WP	1/4 lb.		
	Parathion	1	21	WP	5 oz.		
Pandemis moth	Parathion	1	21	WP	5 oz.	Early spring when larvae appear.	
Periodical cicada	Carbaryl	10	3	WP	1 lb.	Late May or early June when adults start emerging, early in morning before they become active; repeat every 3-5 days as needed.	
	Tepp	0	3	20% EC	1/2-1 pt. EC		
Plum curculio	EPN	3	21	WP	3/8 lb.	In South at petal fall, 10 days later, 7-10 days later, and 4-5 and 2 weeks before harvest. In North 3-4 times 7-10 days apart, beginning at shuck-off.	
	Guthion	2	21	WP	1/3 lb.		
	Malathion	8	7	WP	1/2-3/4 lb.		
	Methoxychlor	14	21	WP	1 1/2 lb.		
	Parathion	1	21	WP	5 oz.		

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FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Plum curculio (con.)	Dieldrin	0.1	--	WP	1/4-1/2 lb.	Can be substituted for other materials in petal fall and first and second covers.	Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Aldrin	0.1	--	WP, D, or G	2 lb./acre	Ground cover application in spring before petal fall in southeastern States. Work into soil.	Do not use dieldrin after second cover.
	Dieldrin	0.1	45	WP, D, or G	2 lb./acre		
	Heptachlor	0	--	WP, D, or G	2 lb./acre		
	Carbaryl	10	3	WP	1 lb.	Use when application is needed close to harvest.	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
Rose chafer	DDT	7	30	WP	1 lb.	When chafers appear.	
	EPN	3	21	WP	3/8 lb.		
	Parathion	1	21	WP	5 oz.		
Scales, European fruit lecanium, terrapin, and cottony peach	Carbaryl	10	3	WP	1 lb.	At completion of hatching, about last of June; a second application may be made if infestation persists.	
	Guthion	2	21	WP	1/4 lb.		
	Malathion *	8	7	WP 57% EC	0.5-0.6 lb. 1 qt. EC		
	Parathion	1	21	WP	5 oz.		
Scales, Forbes, San Jose, walnut, and white peach All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal.	Dormant.	
	Carbaryl	10	3	WP	1/2 lb.	When crawlers are active.	
	Guthion	2	21	WP	1/3 lb.		

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* For home garden use only

Continued on page 139

* For home garden only.

Use Pesticides Safely—Follow the Label

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEACH (con.)							
Scales, Forbes, San Jose, walnut, and white peach (con.) All areas (con.)	Malathion *	8	7	WP	1/4-5/8 lb.	When crawlers are active.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	21	WP	5 oz.		
Pacific Northwest	Mineral oil + lime sulfur	Exempt	--	EC or emulsion + liquid	1 gal. + 3 gal.	Dormant or delayed dormant.	Do not use dieldrin after second cover.
	Diazinon	0.75	20	WP	1/2 lb.	Pink or shuck split.	
	Parathion	1	21	WP	1/4 lb.		
Stink bugs	Dieldrin	0.1	45	WP	1/4 lb.	Petal fall and first or second cover.	Do not apply more than 5 lb. of parathion per acre per year. Do not apply more than once after bloom.
	Carbaryl	10	3	WP	1 lb.	Petal fall and 2-3 times 10 days apart.	
	Guthion	2	21	WP	1/3 lb.		
	Parathion	1	21	WP	5 oz.		
Tarnished plant bug	DDT	7	30	WP	1 lb.	Just before bloom and at petal fall.	
	Dieldrin	0.1	45	WP	1/4 lb.		
	Guthion	2	21	WP	1/3 lb.		
	Parathion	1	21	WP /	5 oz.		

* For home garden only.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
PEAR								
Aphids, apple, and apple grain	Dinitroresol	0	--	EC or WP	0.6 lb.	Dormant.	Do not use demeton, parathion, or tepp in small home plantings; should be applied only by a trained operator.	
	Benzene hexachloride	5	60 *	WP	0.2 lb. gamma	Prepink or pink.		
	Lindane	10	60	WP	1/4 lb.			
	Demeton	0.75	21	EC (2 lb./gal.)	3/4-1 pt. EC	Prepink or pink or when aphids appear.	Do not apply demeton more than 3 times per season.	
	Diazinon	0.75	14	WP	1/4 lb.	When aphids become abundant.	Remove excess residue of lead arsenate at harvest.	
	Malathion	8	1	WP	1/2 lb.			
	Parathion	1	14	WP	0.15 lb.			
	Tepp	0	3	20% EC	2/3 pt. EC			
Borer, roundheaded apple tree	DDT	7	30	WP	1 lb.	3 weeks after petal fall and 2-3 weeks later.	Do not use carbaryl before 30 days after full bloom.	
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener			
Borer, shot-hole	DDT	7	30	WP	1 lb.	When adults are active in May and September or after harvest.		
	Parathion	1	14	WP	0.3 lb.			
Climbing cutworms	DDT	7	30	10% D	Small handful	To trunk and surrounding soil when opening buds are attacked.		
Codling moth	Carbaryl	10	1	WP	3/8 lb.	2-4 cover sprays begin- ning with first cover.		
Continued on page 141	DDT	7	30	WP	1 lb.			
* Or not after fruit starts to form								

* Or not after fruit starts to form.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Codling moth (con.)	Guthion	2	15	WP	1/3 lb.	2-4 cover sprays beginning with first cover.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
	Parathion	1	14	WP	1/4 lb.		
Fruit-tree leaf roller	Mineral oil	Exempt	--	EC or emulsion	3 gal.	Dormant.	Remove excess residue of lead arsenate at harvest. Do not allow dairy or meat animals to graze on areas treated for grasshopper control with aldrin, dieldrin, or toxaphene.
	DDT	7	30	WP	1 lb.	When buds begin to separate.	
	Lead arsenate	7 (combined lead)	40	Powder	4 lb. + hydrated lime 4 lb. or other safener		
		Parathion	1	14	WP	0.3 lb.	
Fruitworms	DDT	7	30	WP	1 lb.	Calyx or first cover.	Do not use carbaryl before 30 days after full bloom. Do not apply endosulfan more than once during fruiting period.
	Guthion	2	15	WP	1/4 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb. + hydrated lime 3 lb. or other safener		
Grasshoppers	Aldrin	0.25	30	EC	4 oz.	Spray ground cover and fence rows with 100 gal./ acre when grasshoppers become numerous.	
	Carbaryl	10	1	WP	1 lb.		
	Dieldrin	0.25	35	EC or WP	2 oz.		
	Parathion	1	14	EC or WP	6 oz.		
	Toxaphene	7	40	60% EC	1/3 gal. EC		
Mite, pear rust	Carbaryl	10	1	WP	1 lb.	Once, when mites appear.	
	Endosulfan	2	30	WP	1/2 lb.		
	Kelthane	5	7	EC or WP	3/8 lb.		

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Mites, clover and European red	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal.	Late dormant to delayed dormant.	Do not use demeton or tepp in small home plantings; should be applied only by a trained operator. Do not use fenson or Genite 923 after edible parts begin to form. Do not apply demeton more than 3 times per season. After 1st cover do not make more than 1 application of tetradifon at 4 oz. or 2 applications at 2 oz. per 100 gallons. Do not feed pomace from fruit treated with tetradifon to livestock. Do not use ovex in Pacific Northwest.
	Mineral oil + lime sulfur*	Exempt + safe	--	Liquid	2 gal. + 3 gal.		
	Fenson	--	--	WP	1/4 lb.	Prepink or pink.	
	Genite 923	--	--	EC or WP	12 oz.		
	Ovex	3	30	WP WP	2 oz. 4 oz.	Pink, calyx. In cover sprays as needed.	
	Demeton	0.75	21	EC (2 lb./gal.)	1/2-1 pt. EC	Pink.	
	Tetradifon	5	1	WP	2-4 oz.	Petal fall or 1st cover if prebloom treatment was omitted.	
	Chlorobenzilate	5	7	WP	0.31-0.38 lb.	2-3 times in summer 7-10 days apart when infestation threatens except, in West, in 1st or 2nd and in 3rd cover sprays.	
	Kelthane	5	7	EC or WP	3/8 lb.		
	Tepp	0	3	20% EC	2/3 pt. EC	Cover sprays, 2-3 times 7 days apart.	
Mite, pear leaf blister All areas	Demeton	0.75	21	EC (2 lb./gal.)	1/2-1 pt. EC	In spring or summer when dormant treatment was omitted or ineffective.	

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* Use in Pacific Northwest only.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. <i>(active ingredient unless otherwise indicated)</i>	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Mite, pear leaf blister (con.) All areas (con.)	Diazinon	0.75	14	WP	1/2 lb.	In early fall after harvest.	Do not use tepp in small home plantings; should be applied only by a trained operator. After 1st cover do not make more than 1 application of tetradifon at 4 oz. or 2 applications at 2 oz. per 100 gallons. Do not feed pomace from fruit treated with tetradifon to livestock.
	Carbaryl	10	1	WP	1 lb.	In fall when mites are migrating from leaves to buds or late in dormant season just as buds are swelling.	
	Lime sulfur	Safe	--	Liquid	8 gal.		
	Lime sulfur + wetttable sulfur	Safe	--	Liquid + powder	4 gal. + 2 lb.	In early fall after harvest.	
	Mineral oil	Exempt	--	EC or emulsion	3 gal.	Just as buds are swelling.	
Pacific Northwest	Mineral oil + lime sulfur	Exempt + Safe	--	EC or emulsion + liquid	2 gal. + 3 gal.		
Mites, two-spotted spider, McDaniel, and related species	Chlorobenzilate	5	14	WP	0.31-0.38 lb.	2-3 times in summer 7-10 days apart when infestation threatens except, in West, in 1st or 2nd and in 3rd cover sprays.	Remove excess residue of lead arsenate at harvest. Do not use carbaryl before 30 days after full bloom.
	Kelthane	5	7	EC or WP	3/8 lb.		
	Tetradifon	5	1	WP WP	4 oz. 2 oz.	When infestation starts. In 2 applications as needed.	
	Ovex *	3	30	WP	1/4 lb.	Cover sprays, 2-3 times 2-4 weeks apart.	
	Tepp	0	3	20% EC	2/3 pt. EC	Cover sprays, 2-3 times 7 days apart.	
Pear leafworm	Lead arsenate	7 (combined lead)	40	Powder	2 lb.	At petal fall.	

* Not recommended in Northwest.

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Pear midge	DDT	7	30	WP	1 lb.	Just before sepals separate and 7 days later.	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator.
	Guthion	2	15	WP	1/4 lb.		
Pear psylla All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal., other oil 3 gal.	Delayed dormant.	Do not use rotenone near ponds or streams containing fish. Do not use Perthane in more than 2 cover sprays at least 30 days apart. Do not use Dilan while fruit is present. Do not graze livestock in treated orchards or feed crop waste or other edible parts. Do not apply Morestan after first bloom.
	Rotenone + summer oil	Exempt	1	WP + EC or emulsion	0.1 + 2 qt.	In summer when psyllas occur in numbers.	
	Summer oil	Exempt	--	EC or emulsion	Superior oil 3 qt.		
	Guthion	2	15	WP	1/3 lb.	Petal fall and in summer when psyllas occur in numbers.	
	Perthane	15	7	EC	1 lb.		
	Dilan	--	--	WP	1/2 lb.	On nonbearing trees or after harvest of bearing trees when psyllas occur in numbers.	
Pacific Northwest	Mineral oil + lime sulfur	Exempt + Safe	--	EC or emulsion + liquid	3 gal. + 3 gal.	Delayed dormant.	Remove excess residue of lead arsenate at harvest.
	Morestan	--	--	WP	1/4 lb.		
Pear slug	DDT	7	30	WP	1 lb.	2 weeks after bloom.	
	Lead arsenate	7 (combined lead)	40	Powder	2 lb.		
	Parathion	1	14	WP	1/4 lb.		
Pear thrips	DDT	7	30	WP 5% D	1 lb. Thorough coverage	When half of buds are in green-tip stage.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Periodical cicada	Carbaryl	10	1	WP	1 lb.	Late May or early June when adults emerge; repeat every 3-5 days as needed; early in morning before cicadas are active.	Do not use Guthion, parathion, or tepp in small home plantings; should be applied only by a trained operator.
	Tepp	0	3	20% EC	1/2-2/3 pt. EC		
Plum curculio	Dieldrin	0.25	35	WP	1/4 lb.	At petal fall and 10 days later.	Do not use carbaryl before 30 days after full bloom. Do not apply dieldrin in mid- season or late season if a heavy chlorinated organic insecticide program is used.
	Guthion	2	15	WP	1/3 lb.		
	Lead arsenate	7 (combined lead)	40	Powder	3 lb.		
	Parathion	1	14	WP	0.3 lb.		
Scales, Forbes and San Jose All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 3 gal.	Dormant.	Remove excess residue of lead arsenate at harvest.
					Superior oil 2 gal.	Delayed dormant.	
	Carbaryl	10	1	WP	1 lb.	When crawlers are present -- about first or second cover and last half of July.	
	Guthion	2	15	WP	1/3 lb.		
	Parathion	1	14	WP	0.15 lb.		
Pacific Northwest	Mineral oil + lime sulfur	Exempt + Safe	--	EC or emulsion + liquid	2 gal. + 3 gal.	Dormant or delayed dormant.	
	Parathion	1	14	WP	1/4 lb.	1 within 2 weeks of prepink.	
Scale, scurfy	DDT	7	30	WP	1 lb.	When eggs are hatching, usually calyx and first cover.	
	Parathion	1	14	WP	0.3 lb.		

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PEAR (con.)							
Syneta leaf beetle	DDT	7	30	5% D	Thorough coverage	Calyx and 10-14 days later if infestation is severe.	Remove excess residue of lead arsenate at harvest.
	Lead arsenate	7 (combined lead)	40	Powder 30% D	3 lb. Thorough coverage		
Treehoppers	Mineral oil	Exempt	--	EC or emulsion	4 gal.	Dormant.	
	DDT	7	30	WP	1/2 lb.	June and July to ground cover as well as trees.	
PLUM AND PRUNE							
Aphids, hop, mealy plum, thistle, and green peach	Mineral oil	Exempt	--	EC or emulsion	Superior oil 3 gal.	Dormant.	Do not use demeton, EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator. Do not apply demeton more than 3 times per season. Do not apply Guthion to plums and prunes more than 8 times per season.
	Demeton	0.75	30	EC (2 lb./gal.)	1 pt. EC	When aphids first appear.	
	Diazinon	0.75	10	WP	1/2 lb.		
	Malathion	8	3	WP 57% EC	1/2 lb. 1 pt. EC		
	Nicotine sulfate	2 (nicotine)	1	40% nicotine soln.	3/4 pt. soln. + hydrated lime		
	Parathion	1	14	WP	0.25 lb.		
Borer, American plum	DDT	7	30	WP	1 1/2 lb.	3-4 times at 3-week intervals beginning in June.	
	EPN	3	21	WP	1/2 lb.		
	Guthion	2	15	WP	1/2 lb.		
	Parathion	1	14	WP	0.45 lb.		

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PLUM AND PRUNE (con.)							
Borer, lesser peach tree	Guthion	2	15	WP	1/2 lb.	To trunks and scaffold limbs 4 times at 3-week intervals, beginning with emergence in June. In Georgia twice 4 weeks apart, for first brood (April and May) and second brood (August and September).	Do not use Guthion or parathion in small home plantings; should be applied only by a trained operator. Do not apply Guthion to plums and prunes more than 8 times per season.
	Malathion	8	3	WP	1 lb.		
	Parathion	1	14	WP	0.45 lb.		
	Paradichloro- benzene + mineral oil or crude cottonseed oil	--	--	Crystals + oil	1 lb. + 2 qt. (undiluted)	Paint infested areas in fall or spring when weather is warm.	Do not apply paradichloro- benzene to healthy tissue or when fruit is present. Keep paradichlorobenzene crystals from touching trees.
Borer, peach tree	DDT	7	42	WP	3-4 lb.	In latitude of Virginia and northward 2 applications to trunks (July 1-15 and 3-4 weeks later); south- ward 3 (July 10-15 and after 3-4 week intervals); in south Georgia 4 at 4-week intervals beginning August 1.	Apply endosulfan only on bark from scaffold branches to ground. Do not pour or spray ethylene dichloride onto trunk.
	Endosulfan	2	7	WP	3/4 lb.		
	Guthion	2	15	WP	1/2 lb.		
	Parathion	1	14	WP	1/2 lb.		
	Ethylene dichloride	--	--	EC	1/8 pt. 7.5% emulsion per tree for 1-year trees to 1/2 pt. 20% emulsion for those 4 years or older	To ground in ring around trunk in fall or first warm spell in spring.	
	Paradichloro- benzene	--	--	Crystals	1/4-1 1/2 oz. per tree, depending on age and size	To ground in ring around trunk in late August to early September in North, to late October in South.	

FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PLUM AND PRUNE (con.)							
Borer, peach twig	DDT	7	30	WP	1 lb.	Petal fall and 10 days later if infestation persists.	Do not use Guthion, parathion, or tepp in small home plantings; should be applied only by a trained operator.
	Guthion	2	15	WP	1/4 lb.		
	DDT + parathion	7 + 1	30	WP + WP	1 + 1/4 lb.		
	Basic lead arsenate	7 (combined lead)	30	Powder	3-4 lb.	Just before bloom and at petal fall.	Do not apply Guthion to plums and prunes more than 8 times per season.
Borer, shot-hole	DDT	7	30	WP	1 lb.	When beetles are active, usually in late May or June and September or after harvest.	Do not make more than 2 applications of ethion during fruiting period. Do not repeat application of Kelthane within 30 days.
	DDT + parathion	7 + 1	30	WP + WP	1/2 + 1/4 lb.		
	Parathion	1	14	WP	0.3 lb.		
Eye-spotted bud moth	Lead arsenate	7 (combined lead)	30	Powder	3 lb. + hydrated lime 3 lb.	Just as tips of leaves are pushing out from buds; if infestation is serious, repeat in 7-10 days.	Remove excess residue of lead arsenate at harvest.
Mites, European red and two-spotted spider	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal., other oil 3 gal.	Dormant.	
	Ethion	2	45	WP	1/4 lb.	In summer; repeat after 7-10 days if needed.	
	Kelthane	5	7	EC or WP	0.28-0.37 lb.		
	Parathion	1	14	WP	1/4 lb.		
	Tepp	0	3	20% or 40% EC	2/3 or 1/3 pt. EC		

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FRUIT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PLUM AND PRUNE (con.)	Tetradifon	5	1	WP	4 oz.	In summer; repeat after 7-10 days if needed.	Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator. Do not apply Guthion to plums and prunes more than 8 times per season. Do not make more than 3 applications of tetradifon during fruiting period. Do not use dieldrin after first cover spray.
Mites, European red and two-spotted spider (con.)							
Mites, plum nursery	Endosulfan	2	7	WP	1/2 lb.	When mites first appear; repeat if necessary.	
	Kelthane	5	7	WP	0.28 lb.		
Plum curculio	Dieldrin	0.1	30	WP	1/4 lb.	3-4 times every 10 days beginning at petal fall.	
	EPN	3	21	WP	6 oz.		
	Guthion	2	15	WP	4-5 oz.		
	Methoxychlor	14	7	WP	1 1/2 lb.		
	Parathion	1	14	WP	0.3 lb.		
Scales, Forbes, and San Jose All areas	Mineral oil	Exempt	--	EC or emulsion	Superior oil 2 gal.	Dormant.	Do not repeat application of Kelthane within 30 days.
	Carbaryl	10	3	WP	1 lb.	When crawlers are active.	
	Malathion*	8	3	WP	0.5-0.63 lb.		
	Parathion	1	14	WP	0.15 lb.		
Pacific Northwest	Mineral oil + lime sulfur	Exempt + Safe	--	EC or emulsion + liquid	1 gal. + 3 gal.	Dormant or delayed dormant.	
	Parathion	1	14	WP	1/2 lb.	7-10 days after petal fall.	
Scale, oystershell	DDT	7	30	WP	1 lb.	When eggs are hatching, usually calyx and first cover.	
	Parathion	1	14	WP	0.3 lb.		

* For home garden only.

TREE-NUT INSECTS

Do not feed vegetation under trees that have been treated with insecticides to dairy animals or animals being finished for slaughter.
Remove grazing animals from groves during spraying or dusting operations and keep them out until residues decline to a safe level.

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CHESTNUT							
Mites	Aramite	0	--	WP	0.23 lb.	When mites appear in numbers, and 7-10 days later.	Do not apply insecticides without tolerances after shucks begin to open. Do not graze livestock in treated groves.
	Kelthane	5	14	EC or WP	3/8 lb.		
	Malathion	--	--	WP	1/2 lb.		
Weevils	DDT	--	--	WP	2 lb.	3 times 1 week apart, beginning about August 15.	
	Heptachlor	--	--	EC or WP	6 lb./acre	Spray soil or ground cover under trees about 1 week after catkins begin to bloom and 6 weeks later.	
PECAN							
Black pecan and other aphids	Carbophenothion	--	--	EC (4 lb./gal.)	1/2 pt. EC	When yellow spots appear on foliage.	Do not use carbophenothion, demeton, EPN, or Guthion in small home plantings; should be applied only by a trained operator.
	Demeton	0.75	21	EC (2 lb./gal.)	1 pt. EC 1 qt. EC/5 gal. water/acre *		
	Endosulfan	--	--	EC or WP	3/4 lb.		
	EPN	0.5	21	WP	3/8-1/2 lb.		
	Guthion	--	--	WP	3/8-1/2 lb.		

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* Apply by airplane.

TREE-NUT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PECAN (con.)							
Black pecan and other aphids (con.)	Malathion	8	0	EC (5 lb./gal.) WP	1 qt. EC/3 gal. water/acre* $\frac{1}{2}$ lb.	When yellow spots appear on foliage.	Do not use EPN, Guthion, parathion, or tepp in small home plantings; should be applied only by a trained operator. Do not apply insecticides without tolerances after shucks begin to open. Do not graze livestock in treated groves.
	Parathion	--	--	WP 1% D 25% EC	0.15-0.3 lb. 50 lb. D/acre $\frac{1}{2}$ gal. EC/5 gal. water/acre*		
	Tepp	0	3	40% EC	1 pt. EC/5 gal. water/acre*		
<u>Curculios, Curculio</u> <u>aratus</u> and <u>C.</u> <u>pecanae</u>	Benzene hexachloride	--	--	WP	0.4 lb. gamma	Shortly after buds begin to unfold.	
		--	--	WP	0.4 lb. gamma	When buds show $\frac{1}{4}$ -1 in. green.	
	Lindane	--	--	WP	$\frac{3}{8}$ lb.		
Fall webworm	DDT	--	--	WP	1 lb.	When webs become numerous and caterpillars are still small.	
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Parathion	--	--	WP 25% EC	0.3 lb. 2 qt. EC/5 gal. water/acre*		

* Apply by airplane.

TREE-NUT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PECAN (con.)							
Hickory shuckworm	EPN	0.5	21	WP	$\frac{1}{2}$ lb.	3 times 2 weeks apart, beginning August 10-15.	Do not use demeton, EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
Leaf miner (<u>Nepticula</u> sp.)	Guthion	--	--	WP	0.3 lb.	When leaf miners appear and repeat as additional generations occur.	Do not apply insecticides without tolerances after shucks begin to open. Do not graze livestock in treated groves.
	Parathion	--	--	WP	0.3 lb.		
May beetles	DDT	--	--	WP	1 lb.	In spring when beetles are first noticed.	Do not use more than 2% mineral oil on weak trees.
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Parathion	--	--	WP	0.3 lb.		
Mite, <u>Eotetranychus</u> <u>hicoriae</u>	Demeton	0.75	21	EC (2 lb./gal.)	1 pt. EC	When mites appear in numbers; if infestation is heavy, repeat in 10 days.	
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Kelthane	5	14	EC or WP	3/8 lb.		
	Malathion	8	0	EC (5 lb./gal.)	1 pt. EC		
	Parathion	--	--	WP 25% EC	0.3 lb. 2 qt. EC/5 gal.*		
Mites, <u>Brevipalpus</u> spp.	Sulfur	Safe	--	WP	4 lb.	In May or June and in July or August as needed.	
Obscure scale	Mineral oil	Exempt	--	EC or emulsion	2-3 gal.	Dormant.	

*Apply by airplane.

TREE-NUT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PECAN (con.)							
Pecan bud moth	DDT	--	--	WP	1 lb.	4-5 times 2-3 weeks apart when insect appears.	Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Malathion	8	0	WP D	$\frac{3}{4}$ lb. 4 lb./acre		
	Parathion	--	--	WP D	0.3 lb. 0.4 lb./acre		
Pecan leaf casebearer	EPN	0.5	21	WP	$\frac{1}{2}$ lb.	When buds begin to open or when infestation appears from late June to August.	Do not apply insecticides without tolerances after shucks begin to open. Do not graze livestock in treated groves.
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Malathion	8	0	WP EC D	$\frac{3}{4}$ lb. $2\frac{1}{2}$ lb./acre* 2 lb./acre*		
	Parathion	--	--	WP	0.3 lb.		
Pecan nut casebearer	Carbaryl	--	--	WP	1-1 $\frac{1}{2}$ lb.	When first-brood larvae begin to enter nuts (in Florida about time tips of nuts turn brown; in other areas about the time catkin shed is com- plete on such varieties as Schley, Stuart, or Mahan); repeat after 7 days if needed.	
	DDT	--	--	WP	1-1 $\frac{1}{2}$ lb.		
	Endosulfan	--	--	WP	$\frac{3}{4}$ lb.		
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP EC (2 lb./gal.)	$\frac{1}{2}$ lb. 2 qt. EC/20 gal. water/acre*		
	Malathion	8	0	WP D EC (5 lb./gal.)	$\frac{3}{4}$ lb. 4 lb./acre 4/5 gal. EC/20 gal. water/acre*		
	Parathion	--	--	WP D 25% EC	0.3 lb. 1 lb./acre 1 $\frac{1}{2}$ pt. EC		

* Apply by airplane.

TREE-NUT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PECAN (con.)							
Pecan phylloxera	Benzene hexachloride	--	--	WP	$\frac{1}{4}$ lb. gamma $1\frac{1}{2}$ lb. gamma/ 15 gal./acre*	Delayed dormant or until buds show 1-2 in. of growth.	Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
	Lindane	--	--	WP	0.3 lb.		
	Malathion	8	--	WP	$\frac{3}{4}$ lb.		
	Dinitrobutyl- phenol	--	--	36% EC	3 qt. EC	Any time from late February until buds begin to swell.	
	Dinitrocyclo- hexylphenol + mineral oil	-- Exempt	-- --	WP + EC or emulsion	0.8 lb. + 2 gal.		
Pecan weevil	DDT	--	--	WP	3 lb.	When at least 6 weevils can be jarred from any tree, and 10-14 days later; and, if EPN is used, 10-14 days later.	Do not apply insecticides without tolerances after shucks begin to open. Do not graze livestock in treated groves.
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Toxaphene	7	--	EC or WP	$2\frac{1}{2}$ lb.		
Southern green stink bug	EPN	0.5	21	WP	$\frac{1}{2}$ lb.	2-3 times, 2 weeks apart, beginning August 10-15.	
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Parathion	--	--	WP	0.3 lb.		
Spittlebug	Benzene hexachloride	--	--	WP	0.2 lb. gamma	When first leaves are half grown and later, as new generations appear.	
	Endosulfan	--	--	WP	0.6 lb.		
	Guthion	--	--	EC (2 lb./gal.)	$\frac{4}{5}$ qt. EC		
Continued on page 155							

* Apply by airplane.

TREE-NUT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	AMOUNT PER 100 GAL. (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
PECAN (con.)							Do not use EPN, Guthion, or parathion in small home plantings; should be applied only by a trained operator.
Spittlebug (con.)	Parathion	--	--	WP	0.3 lb.	When first leaves are half grown and later, as new generations appear.	
	Toxaphene	7	--	WP	1 lb.		
Twig girdler	DDT	--	--	WP	2 lb.	3 times, 2 weeks apart when first injury is noted.	
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Parathion	--	--	WP	0.45 lb.		
Walnut caterpillar	DDT	--	--	WP	1 lb.	When caterpillars are first noticed and still small.	
	EPN	0.5	21	WP	$\frac{1}{2}$ lb.		
	Guthion	--	--	WP	$\frac{1}{2}$ lb.		
	Parathion	--	--	WP	0.3 lb.		

FLOWER AND ORNAMENTAL PLANT INSECTS

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS		
FLOWER GARDEN PLANTS (Also see Waterlily)									
Ants (Also see Imported fire ant)	Chlordane	--	--	6% D		On nests and infested areas, and around infested plants.	Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label.		
				40% WP	1½ level tsp./3 gal. per 30 sq. ft.	Apply with sprinkling can to drench nests and infested soil. Soak soil around base of infested plants.			
	Mirex	--	--	Bait	--	Follow directions on the package label.			
Aphids (Also see Root aphid and Tulip bulb aphid)	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	On foliage when aphids appear.		Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label.	
	Endosulfan	--	--	2 lb./gal. EC	2 tsp.				
	Lindane	--	--	2% D 20% EC 25% WP	1 tbasp. 1 level tbasp.				
	Malathion	--	--	4% D 57% EC	2 tsp.				
Bagworm	Zectran	--	--	1½ lb./gal. EC	2 tsp.	On infested foliage as needed.			DDT may injure foliage of some varieties of azaleas, camellias, and gourds-- use malathion instead on these crops.
Beetles (For larvae see Wireworms, white grubs, and other beetle grubs in soil)	DDT*	--	--	5% D 25% EC	2 tsp.	To foliage at weekly intervals. For adults of stem borers and stem girdlers dust week- ly with DDT in June. (Cut and burn infested stems; destroy weed hosts.)			
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.				
	Malathion*	--	--	4% D 57% EC	2 tsp.				
	Zectran	--	--	1½ lb. /gal. EC	2 tsp.				
Borers in stems and roots (Also see Iris borer, Pickleworm, and Squash vine borer)	DDT*	--	--	5% D 25% EC	2 tsp.	At weekly intervals to pre- vent infestation; apply also to nearby weeds. (Cut and burn infested stems.)			
	Zectran	--	--	1½ lb./gal. EC	2 tsp.				
Caterpillars (Also see Red-banded leafroller and Pickleworm)	DDT*	--	--	5% D 25% EC	2 tsp.	To foliage at weekly intervals.			
	Malathion*	--	--	4% D 57% EC	2 tsp.				
	Methoxychlor*	--	--	50% WP	2 level tbasp.				
	Zectran	--	--	1½ lb./gal. EC	2 tsp.				

* Not effective for control of Imported fire ant.

* Not effective for some species. See Agriculture Information Bulletin No. 237 for control of specific insects.

Use Pesticides Safely—Follow the Label

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
FLOWER GARDEN PLANTS (con.)							
Cicada, periodical	Carbaryl	--	--	50% WP	1 level tbsp.	On foliage when insects appear.	Do not feed plants treated with chlordane or DDT to poultry, dairy animals, or animals being finished for slaughter.
Crickets, earwigs, and grasshoppers	Chlordane	--	--	6% D 45% EC	2 tsp.	To infested plants and surrounding areas as insects appear.	
	DDT	--	--	5% D 25% EC	1 tbsp.		
Earthworms	Chlordane	--	--	40% WP 45% EC	4 level tsp. /3 gal. / 30 sq. ft. 2 tsp. /3 gal. /30 sq.ft.	Earthworms are beneficial. If they must be controlled, drench the soil around infested plants in pots.	Do not use lindane in this manner in soil to be planted within 2 years to potato or other root crops intended for food, or peanuts, as it may adversely affect their flavor.
Fuller rose beetle	Chlordane	--	--	6% D 40% WP	1½ level tbsp.	On plants about July1; repeat in 2 weeks.	Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label.
	Lindane	--	--	2% D 20% EC	1 tsp.		
Garden symphylan	DDT	--	--	5% D	10 lb. /1,000 sq. ft.	Mix thoroughly with soil before planting.	
	Lindane	--	--	2% D	5 lb. /1,000 sq. ft.		
Greenhouse leaf tier	DDT	--	--	25% EC	1 tbsp.	On foliage as needed.	
	Dimethoate	--	--	2 2/3 lb. /gal. EC	2 tsp.		
	Malathion	--	--	57% EC	2 tsp.		
	Zectran	--	--	1½ lb. /gal. EC	2 tsp.		
Hornets and cicada-killer wasp	Chlordane	--	--	6% D 40% WP	4 level tsp.	These insects are seldom harmful to plants. If they must be controlled apply dust in nest openings in July and August; dust or spray plants being girdled by hornets.	
Imported fire ant	Chlordane	--	--	6% D 45% EC	1-2 cups/mound 4 tbsp. /3 gal. /mound	Break open hard surface of mound and pour in the insecticide; sprinkle surrounding soil as for other ants. If ants survive, repeat in 2 weeks.	
	Mirex	--	--	Bait	--	Follow directions on the package label.	

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
FLOWER GARDEN PLANTS (con.)							
Iris borer	DDT	--	--	5% D 25% EC	1 tbsp.	Apply dimethoate to foliage when infestation begins and repeat in 2 weeks; or apply DDT weekly beginning when plants start to grow in spring.	Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label. DDT may injure foliage of some varieties of azaleas, camellias, and gourds.
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.		
Iris weevil	DDT	--	--	5% D		To flowers if seed are being saved. (Otherwise destroy flower heads when flowers fade.)	
Japanese beetle	Carbaryl	--	--	50% WP	2 level tbsp.	To foliage and flowers as needed.	
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.		
	Malathion	--	--	4% D 57% EC	2 tsp.		
Lacebugs	Lindane	--	--	2% D 20% EC	2 tsp.	On azaleas May 15 and repeat at monthly intervals; on chrysanthemums, as infestation appears.	
	Malathion	--	--	4% D 57% EC	2 tsp.		
Leafhoppers	DDT	--	--	5% D		At weekly intervals as infestation appears. (Protect asters and other flowers with aster cloth shelter.)	
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.		
	Malathion	--	--	4% D 57% EC	2 tsp.		
Leaf miners	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	Thorough coverage to kill larvae in mines.	
	Lindane	--	--	20% EC	1 tbsp.		
	Malathion	--	--	57% EC	2 tsp.		
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Leaf rollers	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	On foliage as needed.	
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Mites Bulb mite	Hot water	--	--	--	--	Immerse bulbs in hot water (111°F.) for 1 hour.	

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FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
FLOWER GARDEN PLANTS (con.)							
Mites (con.)							
Bulb scale mite	Hot water	--	--	--	--	Soak infested amaryllis or narcissus bulbs in hot water (111°F.) for 30 minutes.	
Cyclamen mite	Endosulfan	--	--	2 lb./gal. EC	2 tsp.	On foliage at weekly intervals. (Clean up weed hosts.)	
	Kelthane	--	--	18.5% EC	2 tsp.		
False spider mite	Kelthane	--	--	18.5% EC	1 tsp.	Weekly or as needed.	
Spider mites	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	Weekly or as needed.	
	Kelthane	--	--	18.5% EC	1 tsp.	(Clean up overwintering weed and perennial hosts.)	
	Tetradifon	--	--	25% WP	1 level tbsp.		
Taxus bud scale mite	Endosulfan	--	--	2 lb./gal. EC	2 tsp.	On foliage in 3 weekly applications.	
Mole crickets	Chlordane	--	--	6% D	2 lb./1,000 sq. ft.	To hiding places and areas where plant damage occurs.	
Narcissus bulb fly	Chlordane	--	--	6% D	1 lb. dust/75 ft. of row	On bulbs in planting furrow; to bases of plants in May.	
Pickleworm	Carbaryl	--	--	50% WP	2 level tbsp.	On plants at weekly intervals.	
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.		
	Lindane	--	--	2% D 20% EC 25% WP	1 tbsp. 1 level tbsp.		
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Plant bugs, harlequin bug, squash bug, stink bugs, and lygus bugs	DDT	--	--	5% D 25% EC	1 tbsp.	At 7-10 day intervals when bugs appear.	
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.		
	Malathion	--	--	4% D 57% EC	2 tsp.		
Potato psyllid	DDT	--	--	5% D		On foliage as needed.	

Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label.

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
FLOWER GARDEN PLANTS (con.)							
Red-banded leaf roller	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	On foliage as needed.	Do not use lindane to control root aphid in this manner in soil to be planted within 2 years to potato or other root crops intended for food, or peanuts, as it may adver- sely affect their flavor.
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Root aphid	Lindane	--	--	20% EC	1 tsp.	Pour 1-2 cups around base of infested plants.	
Rose chafer, rose curculio, and rose slug	DDT	--	--	5% D 50% EC	1 tbsp.	On foliage, buds, and flowers as needed.	
Rose midge	DDT	--	--	50% WP	2 level tbsp.	At 10-day intervals to foliage and ground surface.	
Scales and mealybugs General	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	As dormant spray on woody plants; as summer spray against crawlers and young scales.	Do not apply dimethoate to chrysanthemum, Chinese holly, flowering almond, flowering plum, flowering peach, flowering cherry, cherry laurel, or to any plant not specified on the label.
	Malathion	--	--	57% EC	2 tsp.		
	White oil emulsion	--	--	100% EC	5 tbsp.		
Peony scale and Florida wax scale	White oil emulsion	--	--	100% EC	10 tbsp.		
Seed-corn maggot	Chlordane	--	--	40% WP	4 level tsp.	In furrow after seed or corms are placed.	
Slugs and snails	Metaldehyde	--	--	10% D, G, liquids or pellets	Follow directions on container.	In infested areas. (Clean up hiding places.)	
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Sowbugs and pillbugs	DDT	--	--	5% D			
Spittlebugs	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	In early spring to kill hatching nymphs.	
	Lindane	--	--	2% D			
	Methoxychlor	--	--	4% D			
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		
Springtails	Chlordane	--	--	45% EC	2 tsp.	On young infested seedlings.	
	Malathion	--	--	4% D 57% EC	2 tsp.		
Squash vine borer	Carbaryl	--	--	50% WP	2 level tbsp.	On plants at weekly intervals.	
	Lindane	--	--	2% D 20% EC 25% WP	1 tbsp. 1 level tbsp.		
	Zectran	--	--	1½ lb./gal. EC	2 tsp.		

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
FLOWER GARDEN PLANTS (con.)							
Termites	Chlordane	--	--	6% D	4 lb./1,000 sq. ft.	Work into soil in infested areas. (Clean up hiding places.)	
Thrips	DDT	--	--	5% D		To stored gladiolus corms.	
	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	On plants at weekly intervals.	
	Malathion	--	--	4% D			
Tulip bulb aphid	Lindane	--	--	2% D		To bulbs in storage.	
	Malathion	--	--	4% D 57% EC	2 tsp.	On foliage when aphids appear.	
Weevils (Also see Iris weevil)	Chlordane	--	--	6% D		On foliage at 4- or 5-day intervals to protect flowers.	
Whiteflies Azalea whitefly	Malathion	--	--	57% EC	2 tsp.	Dormant spray; in summer spray as for whiteflies in greenhouse.	
	White oil emulsion	--	--	100% EC	5 tbasp.		
Greenhouse whitefly	Dimethoate	--	--	2 2/3 lb./gal. EC	2 tsp.	4 weekly applications on summer foliage.	
	Endosulfan	--	--	2 lb./gal. EC	2 tsp.		
	Lindane	--	--	2% D 20% EC	1 tbasp.		
	Malathion	--	--	4% D 57% EC	2 tsp.		
Wireworms, white grubs, and other beetle grubs in soil	Chlordane	--	--	6% D	4 lb./1,000 sq. ft.	Work into soil before planting. To protect gladiolus, apply to corms in planting furrow.	
	DDT	--	--	5% D	11 lb./1,000 sq. ft.		
WATERLILY							
Aphids, beetles, and leaf cutters	Malathion	--	--	4% D 57% EC	2 tsp.	To flowers and foliage.	Remove fish from pool before applying insecticide; change water before returning fish.

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
HOUSE PLANTS AND HOME GREENHOUSE PLANTS							Move plants outdoors to treat if practicable.
Ants	Chlordane	--	--	45% EC 40% WP	2/3 tsp. 1½ level tsp.	Spray plants. Soak pots, boxes, or shelves. Drench walks or soil at rate of 1 gal. /10 sq. ft.	
Aphids	Lindane	--	--	20% EC 25% WP	1 tsp. 1 level tbsp.	Dip or spray plants.	
	Malathion	--	--	57% EC	2 tsp.		
Cutworms and other caterpillars	DDT	--	--	25% EC 50% WP	1 tbsp. 2 level tbsp.	For cutworms that hide in soil, spray or drench soil. Dip or spray plants. (Hand picking may suffice.)	
	Malathion	--	--	57% EC	2 tsp.		
	Rotenone	--	--	5% EC 4-5% WP	4 tsp. 4 level tbsp.	Dip or spray plants. (Hand picking may suffice.)	
Cyclamen mite	Kelthane	--	--	18.5% EC	1 tsp. Add ½ tsp. mild detergent.	Dip or spray plants weekly until new growth is normal.	
	Hot water	--	--	--	--	Immerse plants 15 minutes in water held at 110°F.	
Earthworms	Chlordane	--	--	45% EC 40% WP	2/3 tsp. 1½ level tsp.	Soak soil in pots, boxes, or planters. Drench other soil at rate of 1 gal. / 10 sq. ft.	
False spider mites	Kelthane	--	--	18.5% EC 18.5% WP	1 tsp. 1 level tbsp. Add ½ tsp. mild detergent to either formulation.	Dip or spray plants.	
Fungus gnats	Chlordane	--	--	45% EC 40% WP	2/3 tsp. 1½ level tsp.	Soak soil in pots, boxes, or planters. Drench soil at rate of 1 gal. /10 sq. ft.	
	DDT	--	--	25% EC 50% WP	1 tbsp. 2 level tbsp.		

FLOWER AND ORNAMENTAL PLANT INSECTS (continued)

CROP AND INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER GALLON UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
HOUSE PLANTS AND HOME GREENHOUSE PLANTS (con.)							
Mealybugs	Malathion	--	--	57% EC	2 tsp. Add $\frac{1}{2}$ tsp. mild detergent.	Dip or spray plants.	Move plants outdoors to treat if practicable.
Millipedes	DDT	--	--	25% EC 50% WP	1 tbsp. 2 level tbsp.	Drench soil and hiding places of pest.	
Psocids	Chlordane	--	--	45% EC 40% WP	2 tsp. 4 level tsp.	Spray soil, pots, saucers, or shelves.	
Scales	Malathion	--	--	57% EC	2 tsp. Add $\frac{1}{2}$ tsp. mild detergent.	Dip or spray plants at 3-to 4- week intervals.	
Slugs and snails	Metaldehyde	--	--	B		As directed on container label.	
Sowbugs and pillbugs	DDT	--	--	25% EC 50% WP	1 tbsp. 2 level tbsp.	Spray soil and hiding places of pests.	
Spider mites	Kelthane	--	--	18.5% EC 18.5% WP	1 tsp. 1 level tbsp.	Dip or spray plants weekly or as needed.	
	Malathion	--	--	57% EC	2 tsp.		
Springtails	Chlordane	--	--	45% EC 40% WP	2 tsp. 4 level tsp.	Spray soil, pots, saucers, or shelves.	
	Malathion	--	--	57% EC	2 tsp.		
Thrips	DDT	--	--	25% EC 50% WP	1 tbsp. 2 level tbsp.	Dip or spray plants.	
	Malathion	--	--	57% EC	2 tsp.		
Whiteflies	Lindane	--	--	25% EC 25% WP	1 tsp. 1 level tbsp.	Dip or spray plants weekly or as needed.	
	Malathion	--	--	57% EC	2 tsp.		
	Rotenone	--	--	5% EC 4-5% WP	4 tsp. 4 level tbsp.		

COTTON INSECTS

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Beet armyworm	Benzene hexa- chloride DDT Trichlorfon*	- 4 -	- - 7**	D or EC D or EC Soluble powder	0.5 1-1.5 1-1.5	On foliage as needed.	See page 169.
Boll weevil	Aldrin Benzene hexa- chloride Calcium arsenate* Carbaryl* Dieldrin Endrin Guthion* Heptachlor Malathion* Methyl parathion* Methyl Trithion* Strobane Toxaphene	- - - 5 - 0 0.5 0 2 - - 5 5	5 - - - 5 5 1** - - 5 - - -	D or EC D or EC D D or WP D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC	0.25-0.5 0.3-0.5 7-15 1-2.4 0.15-0.5 0.2-0.5 0.25-0.5 0.25-0.5 1-2 0.25-0.5 0.3-0.5 2-4 2-4	On foliage every 3-7 days until controlled.	
Bollworm	Carbaryl DDT Endrin Methyl parathion* Strobane TDE Toxaphene	5 4 0 - 5 - 5	- - 5 5 - - -	D or WP D or EC D or EC D or EC D or EC D or EC D or EC	1-2.5 1-3 0.2-0.5 1 2-4 1-1.5 2-4	On foliage every 5-7 days until controlled.	
Brown cotton leafworm	Endrin Guthion Malathion Parathion	0 0.5 2 -	5 1** - 5	D or EC D or EC D or EC D or EC	0.33 0.25 0.25 0.125	On foliage as needed.	
Cabbage looper	Endosulfan Endrin Methyl parathion	- 0 -	- 5 5	D or EC D or EC D or EC	1 0.2-0.7 0.5-1		
Cotton aphid	Benzene hexa- chloride Carbophenothion* Demeton* Ethion* Malathion* Methyl parathion*	- 0.2 0.75 - - 2 -	- - 21** - - - 5	D or EC D or EC EC EC D or EC D or EC	0.3-0.5 0.375-1 0.125-0.4 0.375-1 0.5-1 0.25-0.5		
Continued on page 165							

* Use when insect is resistant to other insecticides.

** Applies to all types of harvest.

Use Pesticides Safely—Follow the Label

COTTON INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Cotton aphid (con.)	Parathion*	-	5	D or EC	0.1-0.375	On foliage as needed.	See page 169.
	Phosphamidon*	-	14**	D or EC	0.5		
	Di-Syston	0.75	-	D or G	0.5-1	To seed, or as granules in furrow at planting.	
	Phorate	-	-	D, EC, or G	0.5-1		
Cotton fleahopper	Aldrin	-	5	D or EC	0.15-0.5	On foliage as needed.	
	Benzene hexa- chloride	-	-	D or EC	0.3-0.5		
	Bidrin*	-	10**	EC	0.1-0.25		
	Carbaryl*	5	-	D or WP	0.7-2		
	DDT	4	-	D or EC	0.5-2		
	Dieldrin	-	5	D or EC	0.15-0.25		
	Endrin	0	5	D or EC	0.1-0.25		
	Guthion*	0.5	1**	D or EC	0.15-0.4		
	Heptachlor	0	-	D or EC	0.15-0.375		
	Malathion*	2	-	D or EC	0.7-1.25		
	Methyl parathion*	-	5	D or EC	0.15-0.25		
	Strobane	5	-	D or EC	1.5-4		
	Toxaphene	5	-	D or EC	1.5-4		
Cotton leaf perforator	Carbaryl*	5	-	D or WP	1.5-2.5		
	Diazinon*	-	14**	D or EC	0.5		
	Dilan	-	14**	D or EC	0.7		
	Endosulfan	-	-	D or EC	1		
	Malathion	2	-	D or EC	0.6		
	Parathion*	-	5	D or EC	0.5		
	Trichlorfon*	-	7**	Soluble powder	1.5		
Cotton leafworm	Calcium arsenate*	-	-	D or WP	7-10		
	Carbaryl*	5	-	D or WP	1-2		
	Endrin	0	5	D or EC	0.2-0.5		
	Guthion*	0.5	1**	D or EC	0.25-0.375		
	Malathion*	2	-	D or EC	1.25		
	Methyl parathion*	-	5	D or EC	0.125-0.375		
	Parathion*	-	5	D or EC	0.125-0.25		
	Strobane	5	-	D or EC	2		
	Toxaphene	5	-	D or EC	2		
Cutworms	DDT	4	-	D or EC	1-2	On lower portion of plants and soil surface around plants as needed.	
	Dieldrin	-	5	D or EC	0.15-0.3		
	Endrin	0	5	D or EC	0.2-0.4		
	Strobane	5	-	D or EC	2-4		
	Toxaphene	5	-	D or EC	2-4		

* Use when insect is resistant to other insecticides.

** Applies to all types of harvest.

COTTON INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Fall armyworm	Carbaryl Endrin Heptachlor Malathion Strobane Toxaphene	5 0 0 2 5 5	- 5 - - - -	D or WP D or EC D or EC D or EC D or EC D or EC	1-2 0.2-0.4 0.25-0.4 1.25 2-4 2-4	On foliage as needed.	See page 169.
False wireworms Adults on young plants	DDT Dieldrin Endrin Heptachlor	4 - 0 0	- 5 5 -	D or EC D or EC D or EC D or EC	1-1.5 0.4 0.3 0.5		
False wireworms and wireworms	Aldrin Dieldrin Endrin Heptachlor Lindane	- - - - -	- - - - -	Slurry seed treatment with suitable fungicide	1 to 2 oz./100 lb. seed	Mix slurry with seed and dry before planting.	
Field cricket	Dieldrin Endrin	- 0	5 5	D or EC D or EC	0.4-0.75 0.4	On foliage as needed.	
Flea beetles	Aldrin DDT Dieldrin Toxaphene	- 4 - 5	5 - 5 -	D or EC D or EC D or EC D or EC	0.25-0.5 1 0.25-0.33 2-3		
Garden webworm	Carbaryl DDT Dieldrin Endrin Guthion Heptachlor Malathion Methyl Parathion Strobane Toxaphene	5 4 - 0 0.5 0 2 - 5 5	- - 5 5 1* - - 5 - -	D or WP D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC	1-2.5 1-2 0.25-0.5 0.2-0.4 0.25-0.5 0.25-0.5 1.25-2 0.25-0.5 2-4 2-4		
Grasshoppers	Aldrin Carbaryl Dieldrin Endrin Heptachlor	- 5 - 0 0	5 - 5 5 -	D or EC D or WP D or EC D or EC D or EC	0.2-0.375 1-2 0.15-0.25 0.2-0.4 0.25-0.5		
Continued on page 167							

* Applies to all types of harvest.

Use Pesticides Safely—Follow the Label

COTTON INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Grasshoppers (con.)	Malathion Strobane Toxaphene	2 5 5	- - -	D or EC D or EC D or EC	1-2 2-4 2-4	On foliage as needed.	See page 169.
Greenhouse leaf tier	Endrin	0	5	D or EC	0.4		
Leaf rollers	Carbaryl Trichlorfon*	5 -	- 7**	D or WP EC	2 1		
Lygus bugs and other mirids	Aldrin Benzene hexa- chloride Bidrin* Carbaryl* DDT Diazinon* Dieldrin Dimethoate Endrin Guthion* Heptachlor Malathion* Methyl parathion* Naled* Phosphamidon* Strobane Toxaphene Trichlorfon*	- - - 5 4 - - - 0 0.5 0 2 - - - 5 5 -	5 - 10** - - 14** 5 14** 5 1** - - 5 4 14** - - 7**	D or EC D or EC EC D or WP D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC D or EC Soluble powder	0.15-0.375 0.25-0.4 0.3 0.7-2 0.5-1.75 0.5 0.15-0.5 0.25 0.1-0.5 0.15-0.375 0.15-0.375 0.5-1 0.15-0.25 1 0.5 1.5-4 1.5-4 1		
Pink bollworm	Carbaryl DDT	5 4	- -	D or WP D or EC	1.5-2 1.5-2	On foliage every 5-7 days until controlled.	On foliage as needed.
Potato leafhopper	DDT	4	-	D or EC	1-1.5		
Salt-marsh caterpillar	Carbaryl	5	-	D or WP	2		
	Diazinon	-	14**	D or EC	0.6		
	Dilan	-	14**	D or EC	0.6		
	Parathion	-	5	EC	0.5		
	Trichlorfon	-	7**	Soluble powder	1.5-2		
Southern garden leafhopper	Malathion Parathion Trichlorfon	2 - -	- 5 7**	EC EC Soluble powder	1 0.5 1		

* Use when insect is resistant to other insecticides.

** Applies to all types of harvest.

COTTON INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Spider mites	Aramite*	-	-	D or EC	0.25-1	On foliage as needed.	See page 169.
	Bidrin	-	10**	EC	0.1-0.2		
	Carbophenothion	0.2	-	D or EC	0.25-1		
	Chlorobenzilate*	-	-	EC	0.25-1		
	Demeton	0.75	21**	EC	0.125-0.38		
	Ethion	-	-	D or EC	0.25-1		
	Kelthane*	0.1	14**	D or EC	0.5-1.2		
	Malathion***	2	-	D or EC	0.25-0.75		
	Methyl parathion ***	-	5	D or EC	0.25-0.375		
	Parathion	-	5	D or EC	0.1-0.4		
	Sulfur	-	-	D	10-35		
	Tetradifon	-	-	D or EC	0.5		
	Di-Syston	0.75	-	D or G	0.5-1	To seed, or as granules in furrow at planting.	
	Phorate	-	-	D, EC, or G	0.5-1		
Stink bugs	Carbaryl	5	-	WP	2-2.5	On foliage as needed.	
	Dieldrin	-	5	D or EC	0.4-0.5		
	DDT	4	-	D or EC	1		
	Endosulfan	-	-	D or EC	1		
	Methyl parathion*	-	5	D or EC	1		
	Parathion*	-	5	D or EC	0.5		
	Trichlorfon*	-	7**	Soluble powder	1.5		
Thrips	Aldrin	-	5	D or EC	0.08-0.2	To seed, or as granules in furrow at planting.	
	Benzene hexa- chloride	-	-	D or EC	0.13-0.22		
	Bidrin*	-	10**	EC	0.1-0.25		
	Carbaryl*	5	-	D or WP	0.7-1		
	Carbophenothion	0.2	-	D or EC	0.35-0.7		
	DDT	4	-	D or EC	0.25-0.5		
	Dieldrin	-	5	D or EC	0.05-0.4		
	Endrin	0	5	D or EC	0.07-0.15		
	Guthion*	0.5	1**	D or EC	0.08-0.25		
	Heptachlor	0	-	D or EC	0.08-0.2		
	Malathion*	2	-	D or EC	0.3-1		
	Methyl parathion*	-	5	D or EC	0.2		
	Methyl Trithion	-	-	D or EC	0.25		
	Strobane	5	-	D or EC	0.8-1.5		
	Toxaphene	5	-	D or EC	0.8-1.5		
	Di-Syston*	0.75	-	D or EC	0.3-1		
	Phorate*	-	-	D, EC, or G	0.3-1		
	* Use when insect is resistant to other insecticides						

* Use when insect is resistant to other insecticides.

** Applies to all types of harvest.

*** Does not control all species.

Use Pesticides Safely—Follow the Label

COTTON INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (cottonseed) (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HAND HARVEST	FORMULATION	DOSAGE PER ACRE (pounds of active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
White-fringed beetles	Aldrin	-	-	D, EC, or G	Broadcast 2 In row 0.75-1	Broadcast on soil when preparing for planting and immediately work into upper 3 inches or apply insecticide alone or mixed with fertilizer, in row at time of planting.	See below.
	Chlordane	-	-	D, EC, or G	Broadcast 5 In row 1-2		
	DDT	4	-	D, EC, or G	Broadcast 10 In row 2-3		
	Dieldrin	-	-	D, EC, or G	Broadcast 1.5 In row 0.5-0.75		
	Heptachlor	0	-	D, EC, or G	Broadcast 2 In row 0.75-1		
Yellow-striped armyworm	Dieldrin	-	5	D or EC	0.25-0.45	On foliage as needed.	
	Toxaphene	5	-	D or EC	2-3		

Safety Restrictions

Workers entering cottonfields within 5 days after plants have been treated with endrin, or on the day plants are treated with methyl parathion, should wear clean, tightly woven, protective clothing.

Do not apply benzene hexachloride to cotton in rotation with root crops.

Do not apply aldrin, chlordane, chlorobenzilate, endosulfan, ethion, heptachlor, or tetradifon after bolls begin to open. Do not apply Aramite after bolls begin to open (30 days before harvest). Dosages of Dilan in excess of 1 pound per application should not be applied to cotton after bolls open. Do not apply Methyl Trithion after half of the bolls are open.

Demeton, Guthion, methyl parathion, and parathion are highly toxic; use great caution in applying. Carbophenothion is highly toxic if inhaled or swallowed; use adequate precautions in applying.

Do not graze livestock in cottonfields treated with aldrin, Aramite, benzene hexachloride, Bidrin, carbophenothion, chlordane, chlorobenzilate, DDT, demeton, diazinon, dieldrin, Dilan, endosulfan, endrin, ethion, heptachlor, Kelthane, Methyl Trithion, Strobane, or tetradifon.

Do not graze livestock in cottonfields treated late in the season with Guthion, TDE, or toxaphene.

Do not graze livestock in cottonfields treated with trichlorfon within 14 days after application.

Do not feed gin waste from cotton treated with Aramite, Bidrin, chlorobenzilate, demeton, diazinon, Guthion, heptachlor, Methyl Trithion, Strobane, TDE, or toxaphene to livestock.

Do not use cottonseed treated with aldrin, DDT, dieldrin, Di-Syston, endrin, heptachlor, lindane, or phorate for food or feed.

TOBACCO INSECTS

INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Aphids	Endosulfan	--	5	D or EC	1-1½ lb.	On foliage as needed. Use maximum dosage in plant bed.	Guthion or parathion should be applied only by a trained operator. When workers must handle tobacco within 5 days after application of Guthion or parathion, they should be protected against skin contact by wearing clean, dry, cotton gloves and tightly woven clothing.
	Malathion	--	--	EC	1-1½ lb.		
	Parathion	--	5 primings 15 cuttings	D, EC, or WP	¼-½ lb.		
Budworms	<u>Bacillus thuringiensis</u>	--	--	<u>Baits</u> 1 lb. WP*/9 lb. corn meal	10 lb. B	To buds of plants as soon as eggs and small worms appear.	Prime before treating with Guthion. Workers entering treated area within 24 hours of treatment with endosulfan should wear protective clothing. Vegetation treated with malathion may be grazed or harvested for feeding after a waiting period of 7 days.
	DDT	--	30	2 lb. 50% WP/75 lb. corn meal	10 lb. B		
	TDE	--	30	2 lb. 50% WP/75 lb. corn meal	10 lb. B		
	DDT	--	30	D or EC	0.6-1 lb.		
	Endosulfan	--	5	D or EC	0.3-0.5 lb.		
	TDE	--	30	D or EC	0.6-1 lb.		
Cutworms	DDT	--	--	D, EC, or WP	1-1.5 lb.	To transplants and adjacent soil surface, when plants are dry.	
Flea beetles	DDT	--	30	D, EC, or WP	1-2 lb.	Lowest leaves on the plants must be treated.	
	Guthion	--	6	D or EC	0.2-0.4 lb.		
Grasshoppers	Malathion	--	--	EC	1-1½ lb.	To plant bed and soil around margin of bed. Treat field borders and adjacent vegetation preferably when grasshoppers are immature.	

* Bacillus thuringiensis as wettable powder containing 30 billion spores per gram.

Use Pesticides Safely—Follow the Label

TOBACCO INSECTS (continued)

INSECT	INSECTICIDE	TOLERANCE (p. p. m.)	MIN. DAYS FROM LAST APPLICATION TO HARVEST	FORMULATION	DOSAGE PER ACRE (active ingredient unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
Green June beetle Larvae	Carbaryl	--	--	$\frac{1}{2}$ lb. 50% WP/ 50 gal.	100 gal. drench/ 100 sq. yd.	To uprooted areas of plant beds with sprinkling can.	Guthion or parathion should be applied only by a trained operator. When workers must handle tobacco within 5 days after application of Guthion or parathion, they should be protected against skin con- tact by wearing clean, dry, cotton gloves and tightly woven clothing.
	Diazinon	--	--	$\frac{1}{4}$ lb. 50% WP/ 50 gal.			
	Endosulfan	--	5	$\frac{1}{2}$ lb. 25% WP/ 50 gal.			
	Trichlorfon	--	--	$\frac{1}{2}$ lb. 50% soluble powder/50 gal.			
Hornworms	<u>Bacillus thuringiensis</u>	--	--	WP*	2 lb.	To foliage as needed.	Prime before treating with Guthion. Workers entering treated area within 24 hours of treatment with endosulfan should wear protective clothing.
	Endosulfan	--	5	D or EC	0.5-0.75 lb.		
	Guthion	--	6	D or EC	0.5-0.75 lb.		
	TDE	--	30	EC	1 lb.		
	TDE + parathion	--	30	D	1 lb. + 0.1 lb.		
Mole crickets	Chlordane	--	--	1.5% B	6 oz. B/100 sq. yd.	To plant bed.	
	Parathion	--	--	Drench: $\frac{1}{2}$ lb. 15% WP/50 gal.	50 gal. drench/ 100 sq. yd.	To uprooted area with sprinkling can.	
Tobacco suckfly	Parathion	--	5 primings 15 cuttings	D or WP	0.15 lb.	On foliage as needed.	
Vegetable weevil	Aldrin	--	30	D	1 lb.	To infested plants.	
	DDT	--	30	D	2 lb.		
	Parathion	--	5 primings 15 cuttings	D	$\frac{1}{2}$ lb.		
Wireworms Setting-water treatments	Diazinon	--	--	50% WP	$1\frac{1}{2}$ oz. WP/50 gal. water with hand transplanter. 2-3 oz. WP/50 gal. water with mechan- ical transplanter.	Around stem as plant is transplanted. Use 250 gal. / acre and see that soil is wet to surface. Keep well stirred.	
Soil treatments	Diazinon	--	--	EC or G	2 lb.	Broadcast on soil at least 3 weeks before planting; work into top 6-9 in.	
	Parathion	--	--	EC, G, or WP	2 lb.		

* Bacillus thuringiensis as wettable powder containing 30 billion spores per gram.

LIVESTOCK INSECTS

Precautions. In applying insecticides to livestock or around barns, do not contaminate feed or feed and water troughs, or allow runoff into streams. Observe all other precautions specified in this handbook.

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE	Rotenone	--	--				See page 174.
<u>Dairy</u>							
Cattle grubs							
				5% WP (7½ lb. / 100 gal. water)	2-4 qt.	To back with power sprayer 1-3 times every 30 days.	
				5% WP (12 oz. / gal. water)	1 pt.	Use sponge or brush.	
				1.5% D	4-5 oz.	Rub thoroughly on back.	
Face fly	Dichlorvos	--	--	0.5% B	3-5 ml.	Brush on forehead in morn- ing; daily or as needed.	
	Pyrethrins + synergist*	--	--	EC or oil 1% S	1-2 fl. oz.	As mist spray daily with hand or automatic sprayer; do not soak skin.	
				Oil soln. or EC 0.05-0.1% + 0.5-1% S	1-2 fl. oz.	As mist spray daily to head and neck, with hand or automatic sprayer.	
	Ciodrin	--	--	EC or oil 2% S	1-2 fl. oz.	As mist spray daily to all parts of body, including legs.	
				EC, 0.5-1% S	1-2 pt.	Spray thoroughly. Repeat once a week or as necessary.	
				EC, 0.15-0.3% S	1-4 qt.		
				EC, 0.5% S	1-2 qt.	Pen or corral spraying with high pressure equipment.	
Horn flies	Malathion	4 meat 0 milk	--	4% D 5% D	2 oz. 1.5 oz.	Sprinkle on back, neck, and flanks every 3 weeks.	
	Dichlorvos	--	--	1% oil S	1-2 fl. oz.	As mist spray daily to back, flanks, and legs.	
Continued on page 173	Methoxychlor	3 0 milk	--	50% WP	1 tbsp.	Sprinkle on back, neck, and flanks every 3 weeks.	

* Piperonyl butoxide or sulfoxide. Such supplemental synergists as MGK 264, n-propyl isome, or sesame oil may be used as a partial replacement for piperonyl butoxide. Additives such as MGK R-11, MGK R-326, Crag, and Tabatrex may also be included and used according to manufacturer's directions.

Use Pesticides Safely—Follow the Label

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
CATTLE (con.)	Ciodrin	--	--	EC or oil, 2% S	1-2 fl. oz.	As mist spray daily to all parts of body, including legs.	See page 174.	
Dairy (con.) Horn flies (con.)				EC, 0.5-1% S	1-2 pt.	Spray thoroughly. Repeat once a week or as necessary.		
				EC, 0.15-0.3% S	1-4 qt.			
				EC, 0.5% S	1-2 qt.	Pen or corral spraying with high pressure equipment.		
		1% oil	1 gal./20 ft. cable	Saturate back rubbers.				
		Pyrethrins + synergist*	--	--	EC, 0.05% + 0.5% S	1-2 qt.		As wet spray every 3-7 days.
		Lethane 384** Thanite ** Dichlorvos	--	--	Oil soln. or EC 0.05-0.1% + 0.5-1% S	1-2 fl. oz.		As mist spray daily with hand or automatic sprayer.
			--	--	Oil soln., 3% S	1-2 fl. oz.		As mist spray.
			--	--	Oil soln., 5% S	1-2 fl. oz.		
		--	--	Oil soln., 1% S	1-2 fl. oz.			
Horse flies, stable flies, and mosquitoes	Dichlorvos ***	--	--	1% oil S	1-2 fl. oz.	As mist spray, once or twice daily.		
	Ciodrin ***	--	--	Same as for Face flies.				
	Pyrethrins + synergist *	--	--	EC, 0.05-0.1% + 0.5-1% S	1-2 qt.	As wet spray every 2-3 days.		
				Oil soln. or EC, 0.05-0.1% + 0.5-1% S	1-2 fl. oz.	As mist spray daily, with hand or automatic sprayer.		

Continued on page 174

Continued on page 174

* Piperonyl butoxide or sulfoxide. Such supplemental synergists as MGK 264, n-propyl isome, or sesame oil may be used as a partial replacement for piperonyl butoxide. Additives such as MGK R-11, MGK R-326, Crag, and Tabatrex may also be included and used according to manufacturer's directions.

** Used in conjunction with other materials. Not registered for control of horse flies.

*** Not registered for control of horse flies.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Dairy (con.)	Lethane 384*	--	--	Oil soln., 3% S	1-2 fl. oz.	As mist spray.	See below.
Horse flies, stable flies, and mosquitoes (con.)	Thanite*	--	--	Oil soln., 5% S	1-2 fl. oz.		
Lice	Ciodrin	--	--	EC, 0.15-0.3% S	1-4 qt.	Spray thoroughly; repeat after 1 week, if needed.	
				EC, 0.5% S	1-2 qt.	Pen or corral spraying with high pressure equipment.	
				EC, 0.1-0.25% S	1-2 gal. (1 gal. 0.25%)	Apply 2nd application 14 days later.	
	Pyrethrins + synergist**	--	--	EC, 0.025% + 0.25% S	Depending on size of animals and amount of hair	Spray or dust thoroughly; repeat after 2-3 weeks.	
	Rotenone	--	--	5% WP (1-2 lb. / 100 gal. water) 0.5-1% D			
Screw-worms	Diphenylamine	0 meat 0 milk	--	35% (smear 62)	--	Brush or smear on wound and surrounding area, twice first week and then weekly until healed.	
	Lindane	7	--	3% (EQ 335)	Minimum needed, not more than 3 tsp.		
Spinose ear tick	Lindane	7	--	0.75% in xylene- pine oil	½ oz.	Inside ear with spring- bottom oiler.	
Ticks	Ciodrin	--	--	Same as for Lice			
	Pyrethrins + synergist**	--	--	EC, 0.1% + 1% S	Depending on size of animals and amount of hair	Spray animals thoroughly as needed.	
	Rotenone	--	--	5% WP (2-4 oz. / gal. water)			

* Used in conjunction with other materials. Not registered for control of horse flies.

** Piperonyl butoxide or sulfoxide.

Safety Restrictions - Dairy Cattle

Do not apply more than 2 fluid ounces per day per animal when using mist sprays containing Ciodrin, dichlorvos, Lethane 384, or Thanite. Do not wet the hide with the spray.

Do not apply Ciodrin to cattle more often than once a week except as a mist spray. Do not use methoxychlor or malathion in sprays or dips on dairy cattle.

Do not apply malathion dust on dairy cattle during or less than 5 hours before milking.

Certain of the insecticides suggested for Beef Cattle on pages 175 - 179 may also be used on dry dairy animals with limitations. See Safety Restrictions under Beef Cattle, page 179. All of the insecticides suggested for Dairy Cattle may also be used on beef animals.

Use Pesticides Safely—Follow the Label

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Beef							
Cattle grubs	Ronnel* (Trolene)	0 meat 0 milk	60	0.6% in feed	0.3 lb./100 lb. body weight	Daily for 7 days. **	See page 179.
			28	0.26% in feed	0.3 lb./100 lb. body weight	Daily for 14 days. **	
			21	5.5% in block or granules	0.25 lb./100 lb. body weight	Continuously for not less than 75 days.	
	Coumaphos	1 meat and fat 0 milk	--	WP, 0.375-0.5% S or 0.25% dip	Depending on size of animals and amount of hair	Wet entire body to skin. ** Higher concentration needed in northern areas or for late fall application when long hair coats make thorough wetting of the skin difficult.	
				WP, 0.25% S	Depending on size of animals and amount of hair	Make 2 applications not more than 90 days apart. Apply the second spray soon after heel fly activity has stopped.	
				Soln., 4%	$\frac{1}{2}$ fl. oz./100 lb. body weight; maximum 4 fl. oz./ animal	Pour on evenly along animal's backline. **	
	Ruelene	--	28	EC, 0.5% S	Depending on size of animals and amount of hair	Wet entire body to skin. **	
			28	EC, 8.3% in water or soln., 9.4%	1 oz./100 lb. body weight up to 800 lb. animal, but no more than 8 oz./animal	Pour on evenly along animal's backline. **	
	Trichlorfon	--	14	Soluble powder, 1% S	Depending on size of animal and amount of hair	Wet entire body to skin. **	

* Aids in control of lice.

** Use at end of adult heel fly season, but not later than November 1.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Beef (con.)							
Horn flies*	Carbaryl	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	See page 179.
				5% D		Dust back and neck only.	
	Dioxathion	1 0 milk	--	1.5% oil	1 gal./20 ft. cable	Saturate back rubbers.**	
				EC, 0.6% in water	1 qt.	Pour on evenly along animal's backline.	
				EC, 0.15% S	1-2 qt.	To backs every 3 weeks or as needed.	
	Methoxychlor	3	--	EC or WP, 0.5% S	2 qt.		
				5% oil	1 gal./20 ft. cable	Saturate back rubbers.**	
	DDT	7	30	5% oil			
	Toxaphene	7	28	5% oil			
	Ronnel (Korlan)	0 meat 0 milk	56	EC or WP, 0.5% S 5% D	2 qt. 1 tbsp.	To backs every 3 weeks as needed.	
				EC or WP, 0.25% S or dip	1-2 qt.		
			42	1% oil	1 gal./20 ft. cable	Saturate back rubbers.**	
	Coumaphos	1 meat and fat 0 milk	--	WP, 0.125% S or dip	1-2 qt.	To backs every 3 weeks or as needed.	
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S	2 qt.		
				2% oil	1 gal./20 ft. cable	Saturate back rubbers.**	
	Ruelene	--	28	EC, 0.5% S	Depending on size of animals and amount of hair	Spray thoroughly.	
				EC, 8.3% in water or soln., 9.4%	1 oz./100 lb. body weight up to 800 lb. animal, but no more than 8 oz./animal	Pour on evenly along animal's backline.	

* Dips used to control lice will also control horn flies.

** Use of back rubbers will aid in louse control.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE, (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Beef (con.)							
Lice*	Coumaphos	1 meat and fat 0 milk	--	WP, 0.125% S or dip	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly.	See page 179.
	Dioxathion	1 0 milk	--	EC, 0.15% dip or S		Repeat all treatments after 2-3 weeks if needed.	
	Lindane	7	30	EC or WP, 0.03-0.05% S			
			60	EC or WP, 0.03% dip			
			30	1% D			
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S			
	Methoxychlor	3	--	4-5% D EC or WP, 0.5% S (1-1.5% for tail louse) 10% D			
	Carbaryl	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	
	Ronnel (Korlan)	0 meat 0 milk	56	EC or WP, 0.125% dip or S	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly.	
	Toxaphene	7	28	EC or WP, 0.5% dip or S 5% D		Repeat all treatments after 2-3 weeks if needed.	
	Ruelene**	--	28	EC, 0.5% S	Depending on size of animals and amount of hair	Spray thoroughly.	
				Soln., 9.4%	Same as for Horn flies.		

* Dips used to control lice will also control horn flies.

** Ruelene pour-on treatment (see Horn flies) or spray will reduce numbers of lice.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Beef (con.)							
Screw-worms	Coumaphos	1 meat and fat 0 milk	--	5% D		Dust wounds and surrounding area thoroughly. Repeat as necessary.	See page 179.
				WP, 0.25% S, 0.125% dip	Depending on size of animals and amount of hair	Spray wounds thoroughly and wet entire body; repeat after 2 weeks if needed.	
	Ronnell (Korlan)	0 meat	56	EC or WP, 0.5% S			
			21	5% smear	Minimum needed, not more than 3 tsp.	Brush or smear on wound and surrounding area and into deep pockets twice first week and then weekly until healed. Dust wounds and surrounding area thoroughly.	
			21	5% D			
Ticks	Carbaryl	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	
	Coumaphos	1 meat and fat 0 milk	--	WP, 0.125% S or dip	Depending on size of animals and amount of hair	Immerse or spray thoroughly.	
	Dioxathion	1 0 milk	--	EC, 0.15% dip or S		Repeat all treatments after 2-3 weeks if needed.	
	Lindane	7	30 (S) 60 (dip)	EC or WP, 0.03% dip or S			
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S			
	Ronnell (Korlan)	0 meat 0 milk	56	EC or WP 0.75% dip or S			
	Toxaphene	7	28	EC or WP, 0.5% dip or S			
Spinose ear tick	Coumaphos	1 meat and fat 0 milk	--	5% D		Lightly inside ears. Also treat adjacent head area. Repeat as necessary.	

Continued on page 179

Use Pesticides Safely—Follow the Label

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
CATTLE (con.)							
Beef (con.)							
Spinose ear tick (con.)	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S (low pressure)		Lightly inside ears. Also treat adjacent head area. Repeat as necessary.	See below.
	Ronnel (Korlan)	0 meat 0 milk	21	5% D		Dust into ear as deeply as possible and surrounding areas.	
				5% smear		Pour or brush in ears, or apply with a swab.	

Safety Restrictions - Beef Cattle

Certain of the insecticides mentioned below may also be applied to dry dairy animals, with the limitations indicated.

Do not treat sick animals.

Coumaphos, ronnel, Ruelene, and trichlorfon are systemic insecticides.

If you feed ronnel, do not spray, dip, or pour-on ronnel, coumaphos, Ruelene, or trichlorfon. Do not feed ronnel in more than one form. If you are not feeding ronnel and you spray, dip, or pour-on one of these four insecticides, do not also treat the same animal with any one of the other three.

Do not feed ronnel to sick or stressed animals. Do not feed 0.6% ronnel to lactating dairy animals, or to dry dairy animals within 60 days of freshening; or 0.26% in feed within 28 days or 5.5% in block or granules within 21 days of freshening. Do not use spray or back rubbers on lactating dairy animals, or dry dairy animals within 21 days of freshening. Do not reapply sprays within 2 weeks.

Do not reapply dioxathion sprays within 2 weeks or pour-on within 30 days. Do not dip calves less than 3 months old.

Do not use trichlorfon on dairy animals. Do not treat animals less than 3 months old, sick, convalescent, or stressed animals. Do not apply in conjunction with oral drenches, other internal medications, or other organic phosphates.

Do not treat animals less than 3 months old with coumaphos. Spray animals 3-6 months old lightly. Do not use with synergized pyrethrins, allethrin, or synergist. Do not spray animals or apply pour-on for 10 days before or after shipping or weaning, or after exposure to disease. Do not apply in conjunction with oral drenches or other medications, such as phenothiazine or with other organic phosphates. Do not apply to lactating dairy animals, or to dry dairy animals within 14 days of freshening. Do not dip overheated animals.

Do not treat calves with dips or sprays containing more than 0.03% lindane. Do not dip calves less than 3 months old in lindane. Do not use lindane on emaciated or lactating animals.

Do not apply Ruelene to lactating dairy animals or to dry dairy animals within 28 days of freshening. Do not use Ruelene pour-on in extremely hot or humid weather; dermatitis may result. Do not apply Ruelene more often than every 28 days.

Do not use malathion on calves less than 1 month old.

Do not apply carbaryl more often than once every 4 days. Do not use on dairy animals.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
HORSES							
Bots	Trichlorfon	--	--	Tech. , 90%	1 packet (5 grams)/ 250 lb. body weight	Single dose orally in feed, one month after killing frost.	Do not treat sick or debilitated horses, colts less than 4 months old, or mares in the last month of pregnancy. Do not repeat oftener than once every 30 days. Do not administer trichlorfon in conjunction with (or 10 days after treatment with) other organic phosphates or cholinesterase inhibitors. Do not administer intravenous anesthetics, especially muscle relaxants, for a period of 2 weeks after using trichlorfon. Do not treat horses to be used for food.
SHEEP AND GOATS							
Fleeceworms	Coumaphos	1 meat and fat 0 milk	15	0.5% D	1-2 oz.	Rub into wool over entire body.	See page 185.
				WP, 0.125% S or dip	Depending on size of animals and amount of hair	Immerse or spray thoroughly.	
	Dioxathion	1	--	EC, 0.15% dip or S			
	Lindane	7	--	3% (EQ 335), 1 part to 9 parts water		Wet infested area and 3 in. around it.	
	Ronnel (Korlan)	--	21	5% smear, 1 part to 9 parts water			

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LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SHEEP AND GOATS (con.)	Ronnel (Korlan) (con.)	--	84	EC or WP, 0.5% dip or S	Depending on size of animals and amount of hair	Immerse or spray thoroughly.	See page 185.
Fleeceworms (con.)							
Lice	Ciodrin	--	--	EC, 0.5-1% S	1-2 pt.	Spray thoroughly. Repeat once a week or as necessary.	
				EC, 0.15-0.3% S	1-4 qt.		
				EC, 0.1-0.25% S	1-2 gal. (1 gal. 0.25%)	Repeat application after 14 days.	
	Coumaphos	1 meat and fat 0 milk	15	WP, 0.125% S or dip	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly.	
	DDT	7	30	EC or WP, 0.25% dip, 0.5% S	Use DDT only once, but repeat other treatments after 2-3 weeks if needed.		
	Dioxathion	1	--	EC, 0.15% dip or S			
	Lindane	7	30	EC or WP, 0.05% S			
			60	0.025% dip			
			30	1% D			
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S 4-5% D			
	Methoxychlor	3	--	EC or WP, 0.25% dip, 0.5% S			
	Carbaryl	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	

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Continued on page 182

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SHEEP AND GOATS (con.)							
Lice (con.)	Ronnel (Korlan)	--	84	EC or WP, 0.25% dip or S	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly.	See page 185.
	Rotenone	--	--	5% WP (1-2 lb./ 100 gal. water) 0.5-1.0% D		Repeat treatments after 2-3 weeks if needed.	
	Toxaphene	7	28	EC or WP, 0.25% dip, 0.5% S			
	Diazinon *	0.75 meat and fat	14	EC or WP, 0.03% S, 0.06% S (low pressure)	1 gal. 1 qt.		
Screw-worms	Diphenylamine	0 meat 0 milk	--	35% (smear 62)	Minimum necessary to treat wound	Brush or smear on and around wound, twice first week and then weekly until healed.	
	Lindane	7	--	3% (EQ 335)			
	Ronnel (Korlan)	--	21	5% smear		Brush or smear on and around wound.	
		--	84	EC or WP, 0.5% dip or S	Depending on size of animals and amount of hair	Immerse or spray wounds thoroughly. Wet entire body.	
	Coumaphos	1 meat and fat 0 milk	15	WP, 0.25% S			
			--	5% D		Dust wounds and surrounding area thoroughly. Repeat as necessary.	

* Sheep only. Do not use on goats.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SHEEP AND GOATS (con.)							
Keds (sheep tick)	Dieldrin*	0 meat	90	1.5% D	1.5-3 oz.	Dust only once, after shearing.	See page 185.
	Coumaphos	1 meat and fat 0 milk	15	0.5% D	1-2 oz.	Rub into wool over entire body.	
	DDT	7	30	WP, 0.125% S or dip EC or WP, 0.25% dip, 0.5% S	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly.	
	Dioxathion	1	--	EC, 0.15% dip or S		Use DDT only once, but repeat other treatments after 2-3 weeks if needed.	
	Lindane	7	30 (S) 60 (dip)	EC or WP, 0.025% dip, 0.05% S			
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S 4-5% D			
	Pyrethrins + synergist**	--	--	0.1% + 1.0% S			
	Ronnel (Korlan)	--	84	EC or WP, 0.25-0.5% dip or S			

Continued on page 184

* Sheep only. Do not use on goats.

** Piperonyl butoxide or sulfoxide.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SHEEP AND GOATS (con.)							
Keds (sheep tick) (con.)	Rotenone	--	--	5% WP (8 oz./ 100 gal. water)	Depending on size of animals and amount of hair	Immerse or spray thoroughly.	See page 185.
	Toxaphene	7	28	EC or WP, 0.25% dip, 0.5% S		Repeat treatments after 2-3 weeks, if needed.	
	Diazinon*	0.75 meat and fat	14	EC or WP 0.03% S 0.06% S (low pressure)	1 gal. 1 qt.		
				2% D	1.5 oz.	Immediately after shearing.	
Ticks	Coumaphos	1 meat and fat 0 milk	15	WP, 0.125% S or dip	Depending on size of animals and amount of hair	Immerse or spray thoroughly. Repeat after 2-3 weeks, if needed.	
	Dioxathion	1	--	EC, 0.15% dip or S			
	Lindane	7	30 (S) 60 (dip)	EC or WP, 0.025-0.03% dip or S			
	Ciodrin			Same as for Lice			
	Malathion	4 meat 0 milk	--	EC or WP, 0.5% S 4-5% D	Depending on size of animals and amount of hair	Immerse, dust, or spray thoroughly. Repeat after 2-3 weeks, if needed.	
	Ronnel (Korlan)	--	84	EC or WP, 0.25- 0.5% dip or S			
	Toxaphene	7	28	EC or WP, 0.25% dip, 0.5% S			

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* Sheep only. Do not use on goats.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
SHEEP AND GOATS (con.)	Carbaryl *	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	See below.
Ticks (con.)				EC or WP, 0.03% S 0.06% S (low pressure)	1 gal. 1 qt.		

* Sheep only. Do not use on goats.

Safety Restrictions - Sheep and Goats

Do not treat sick animals.

Do not treat animals less than 3 months old with coumaphos. Spray animals 3-6 months old lightly. Do not use with synergized pyrethrins, allethrin, or synergist. Do not spray animals for 10 days before or after shipping or weaning, or after exposure to disease. Do not apply in conjunction with oral drenches or other medication, such as phenothiazine or with other organic phosphates. Do not apply coumaphos on lactating dairy goats or to dry dairy goats within 14 days of freshening.

Do not dip animals less than 3 months old in dioxathion. Do not reapply spray or dip within 2 weeks. Do not use dioxathion on milk goats.

Do not apply Ciodrin more often than once a week.

Do not use lindane on emaciated or lactating animals, except in a smear for screw-worm control. Do not use lindane, DDT, or toxaphene on milk goats. Do not dip animals less than 3 months old in lindane.

Do not reapply ronnel within 2 weeks. Do not apply on lactating dairy goats or dry dairy goats within 21 days of freshening.

Do not use methoxychlor on lactating goats.

Do not use malathion on animals less than 1 month old. Do not apply to lactating dairy goats, or to dry dairy goats within 14 days of freshening.

Do not apply carbaryl more often than once every 4 days. Do not use on goats.

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS	
SWINE								
Lice	Carbaryl	--	7	WP, 0.5% S	1 qt.	Spray thoroughly. Repeat as needed.	Do not treat sick animals.	
	Ciodrin	--	--	EC, 0.5-1% S	1-2 pt.	Spray thoroughly. Repeat once a week or as necessary.	Do not treat animals less than 3 months old with coumaphos. Spray animals 3-6 months old only lightly. Do not use with synergized pyrethrins, allethrin, or synergist. Do not spray animals for 10 days before or after shipping or weaning or after exposure to disease. Do not apply coumaphos in conjunction with oral drenches or other medications, such as phenothiazine or with other organic phosphates.	
				EC, 0.15-0.3% S	1-4 qt.			
				EC, 0.1-0.25% S	1-2 gal. (1 gal. 0.25%)	Repeat application after 14 days.		
	Coumaphos	1 meat and fat 0 milk	--	WP, 0.125% S	Depending on size of animals and amount of hair	Immerse, spray, or dust thoroughly. Use lindane dusts and DDT dusts and sprays only once, but repeat other treatments after 2-3 weeks if needed.		Do not dip animals less than 3 months old in lindane or dioxathion.
	DDT	7	30	EC or WP, 0.5% dip or S 10% D				
	Dioxathion	1	--	EC, 0.15% dip or S				
	Lindane	4	30 (S) 60 (dip) 30 (D)	EC or WP, 0.05-0.06% dip or S 1% D				
	Malathion	4 meat	--	EC or WP, 0.5% S 4-5% D		Do not reapply dioxathion or ronnel within 2 weeks. Withdraw bedding treated with ronnel 14 days before slaughter of swine.		
	Methoxychlor	3	--	EC or WP, 0.5% dip or S		Do not apply Ciodrin more often than once a week.		
	Ronnel (Korlan)	--	42	EC or WP, 0.25-0.5% S				
			14	5% G	0.5 lb./100 sq. ft. bedding		Do not apply carbaryl more often than once every 4 days.	
	Toxaphene	7	28	EC or WP, 0.5% S	Depending on size of animals and amount of hair	Spray thoroughly. Repeat after 2-3 weeks, if needed.		

LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POULTRY							
Lice or mites	Coumaphos	1 meat and fat 0 eggs	--	WP, 0.25% S	1 gal./1,000 sq. ft. of surface	Thorough coverage.	Do not contaminate feed or water, or water utensils or feed troughs. Do not spray in a confined, non-ventilated area. Do not use coumaphos more often than once a week.
				5% D	2 oz./100 sq. ft. of surface or 2 oz./ 30 sq. ft. of litter		
				0.5% D	1 lb./20 sq. ft. of litter		
	Malathion	4 meat 0 eggs	--	WP, 0.25% S	1 gal./100 birds	Direct on birds.	Do not use coumaphos dust or spray on birds within 10 days of vaccination or other stress influence, or in conjunction with other organic phosphates. Provide thorough ventilation while dusting. Do not apply naled direct on chickens under 6 weeks old or on turkeys under 3 months old.
				0.5% D	1 lb./100 birds		
				3% roost paint	1 pt./150 ft.	Paint roosts thoroughly.	
				EC or WP, 1% S	1-2 gal./1,000 sq. ft.	Thorough coverage. (Force into cracks.)	
				4-5% D	1 lb./40 sq. ft. of litter		
	Naled	--	--	4-5% D	1 lb./100 birds	Direct on birds.	
				EC or WP, 0.5% S or dip	1 gal./100 birds (1 gal./400 birds in dip)		
				EC, 0.3% S	1 gal./100 birds	Apply as a light mist to birds, except heads.	
	Carbaryl	5 meat and fat 0 eggs	7	5% D	1 lb./100 birds	Dust birds thoroughly. Repeat in 4 weeks if needed, but not more often.	

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LIVESTOCK INSECTS (continued)

ANIMAL AND INSECT	INSECTICIDE	TOLERANCE (p. p. m. in fat unless otherwise indicated)	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER	FORMULATION AND STRENGTH	AMOUNT OF FORMULATION PER ANIMAL UNLESS OTHERWISE INDICATED	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
POULTRY (con.)							
Lice or mites (con.)	Carbaryl (con.)	5 meat and fat 0 eggs	7	5% D WP, 0.5% S 4% water mist 0.5% water mist spray	1 lb./40 sq. ft. of litter and roosts 1-2 gal./1,000 sq. ft. 1 1/2 gal./1,000 birds with electric fog machine 1 gal./100 birds with cylinder sprayer	Thorough coverage. (Force into cracks.) Direct on birds, roosts, and walls.	Do not contaminate feed or water, or water utensils or feed troughs. Do not spray in a confined, non-ventilated area. Do not apply carbaryl spray on birds except in a water mist spray. Do not treat nest litter. Ventilate while spraying.
	Nicotine sulfate	--	--	40% nicotine soln.	1 pt./150-200 ft.	Paint on roosts only.	
Lice only	Rotenone	--	--	1% D	1 lb./100 birds	Direct on birds, roosts, and nests.	
Depluming mite only	Sulfur	--	--	100% D 1-2 oz./gal. water dip		Dust or immerse thoroughly.	
Fowl tick	Chlordane	--	--	EC or WP, 2% S	1 gal./1,000 sq. ft.	For outside use only where ticks are numerous, such as trees, old roosts, or buildings.	Do not apply naled direct on chickens under 6 weeks old or on turkeys under 3 months old.
	DDT	--	--	EC or WP, 5% S	1-2 gal./1,000 sq. ft.		
	Toxaphene	--	--	EC or WP, 5% S	1-2 gal./1,000 sq. ft.		
	Malathion	4 meat 0 eggs	--	EC or WP, 3% S	1-2 gal./1,000 sq. ft.	Thorough coverage of walls, ceilings, and floors. Force into cracks.	
	Carbaryl	5 meat and fat 0 eggs	7	WP, 2% S	1-2 gal./1,000 sq. ft.		
	Naled	--	--	EC, 0.3% S	2 gal./1,000 sq. ft.		

LIVESTOCK INSECTS (continued)

INSECTS	INSECTICIDE	FORMULATION AND STRENGTH	DOSAGE (Formulation per 1,000 sq. ft. for surfaces and per 1,000 cu. ft. for space sprays unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
INFESTED AREAS					
House flies, face flies, and stable flies * <u>Inside or outside of barns</u>	Pyrethrins + synergist **	0.1-0.25% + 1-2% S		Space spray.	In using any insecticide, do not contaminate animal feed, water, milk, or milking equipment. Do not apply dichlorvos in a fog in areas where animals have received direct applications of this insecticide within 8 hours. Exclude dairy animals while spraying barns (except synergized pyrethrins). Do not use lindane in poultry houses. Do not apply fenthion in dairy barns, milkrooms, or poultry houses.
	Dichlorvos	EC, 0.5% S	1 qt.	Spray exterior and interior surfaces.	
		0.5% oil 1% oil	2 pt. /8,000 cu. ft. 1 pt. /8,000 cu. ft.	Fog.	
		1% dry B 0.1% liquid B		Broadcast or sprinkle daily or as needed where flies congregate.	
	Trichlorfon	1-2% dry B 0.1% liquid B			
	Diazinon	1-2% dry B 0.1% liquid B			
	Lindane	EC or WP, 1% S	1-2 gal.	Thorough coverage of resting surfaces.	
		EC or WP, 0.3-0.5% S	1 gal.		
	Methoxychlor	EC or WP, 2.5-5% S	1-2 gal.		
	Fenthion	0.75-1.5% S	2 gal.		
	Ronnel (Korlan)	EC or WP, 0.5-1% S	1-2 gal.		

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* Baits ineffective against stable flies. For face flies, spray sunny surfaces of barns, shelters, and fences where flies congregate.

** Piperonyl butoxide or sulfoxide.

LIVESTOCK INSECTS (continued)

INSECTS	INSECTICIDE	FORMULATION AND STRENGTH	DOSAGE (Formulation per 1,000 sq. ft. for surfaces and per 1,000 cu. ft. for space sprays unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
INFESTED AREAS (con.)					
House flies, face flies, and stable flies* (con.)					
<u>Inside or outside of barns</u> (con.)	Ronnel (Korlan) (con.)	WP, 2% S		Spray poultry droppings under cages.	In using any insecticide, do not contaminate animal feed, water, milk, or milking equipment.
		1% dry B 2% liquid B		Broadcast or sprinkle daily or as needed where flies congregate.	Exclude dairy animals while spraying barns (except Ciodrin and naled).
	Ciodrin	EC, 1% S EC or soln., 2% S	1 gal. 1/2 gal.	Thorough coverage of resting surfaces.	Remove animals from buildings prior to spraying with dimethoate.
	Naled	1% in oil	1 fl. oz./3,000 cu. ft.	Space spray or fog.	
	Malathion	0.5% dry B 0.5% liquid B 3.5% dry B 1.25% liquid B		Broadcast or sprinkle daily or as needed where flies congregate.	Do not apply oil solution of naled directly on animals or in poultry houses when birds are present.
		EC or WP, 2.5% S	1-2 gal.	Thorough coverage of resting surfaces.	
	Dimethoate	EC, 1% S	1 gal.		
<u>Outside of barns only</u>	Chlordane	EC or WP, 2-2.5% S	1-2 gal. S/1,000 sq. ft.	Thorough coverage of exterior surfaces, vegetation, manure, and refuse. Use DDT also as space spray.	
	DDT	EC or WP, 2-5% S	1/2-1 gal. S/1,000 sq. ft. or cu. ft.		
	Toxaphene	EC or WP, 5% S	1/2-1 gal. S/1,000 sq. ft.		

* Baits ineffective against stable flies. For face flies, spray sunny surfaces of barns, shelters, and fences where flies congregate.

LIVESTOCK INSECTS (continued)

INSECTS	INSECTICIDE	FORMULATION AND STRENGTH	DOSAGE (Formulation per 1,000 sq. ft. for surfaces and per 1,000 cu. ft. for space sprays unless otherwise indicated)	WHERE AND WHEN TO APPLY	SAFETY RESTRICTIONS
INFESTED AREAS (con.)					
Chiggers	Chlordane or toxaphene	EC or WP, 1% S or 5% D	2 lb. insecticide/acre	Spray or dust every 4-8 weeks or as needed.	Do not use on crops or grazing areas.
	Lindane	EC or WP, 0.1% S or 1% D	0.25-1 lb. insecticide/ acre		
	Malathion	EC, 0.25% S	0.5-1 lb. insecticide/ acre	Apply 1 day before turkeys are put on range. Repeat after 2-3 weeks.	Do not contaminate feed, feed troughs, or drinking water.
Ticks	Chlordane, dieldrin, or toxaphene	EC or WP, 1% S or 5 or 10% D	1-3 lb. insecticide/acre	Once or twice a year as needed.	Do not use on crops or grazing areas.
	DDT	EC or WP, 1% S or 10% D	1-3 lb. insecticide/acre		
	Lindane	EC or WP, 0.1% S or 1% D	0.2-1 lb. insecticide/ acre		
Imported fire ant	Aldrin	EC or WP, 0.25%		Drench nest with liquid. Dust nest thoroughly.	
	Chlordane	EC or WP, 0.25% or 5% D			
	Dieldrin	EC or WP, 0.25% or 1.5% D			
	Heptachlor	EC, 0.25% or 2.5% D			
	Mirex	0.075% B 0.15% B 0.3% B	10 lb. bait/acre 5 lb. bait/acre 2.5 lb. bait/acre	Broadcast in infested areas.	Do not make more than 3 applications in any 12-month period or more than 1 application in any 45- to 60-day period. (See container label)

MOSQUITOES

INSECTICIDE*	CONTROL OF LARVAE OUTDOORS		CONTROL OF ADULTS OUTDOORS		CONTROL OF ADULTS IN DWELLINGS		SAFETY RESTRICTIONS
	LARVICIDE	PREHATCH <u>1/</u>	SPACE SPRAY OR FOG <u>2/</u>	RESIDUAL ON VEGETATION <u>3/</u>	SPACE SPRAY OR AEROSOL <u>2/</u>	RESIDUAL SPRAY <u>2/</u>	
	DOSAGE (active ingredient per acre unless otherwise indicated)						
Pyrethrins	Oil emulsion, 0.006% at 55 gal./acre Oil emulsion, 0.007% at 15-25 gal./acre	-- --	0.25% + 2% synergist <u>4/</u> (about 0.01 lb. pyrethrins/acre)	-- --	0.25% + 2% synergist <u>4/</u>	-- --	Do not exceed these dosages or fish kill may result.
Malathion	EC or soln., 0.5 lb.	--	0.1-0.5 lb.	--	2-5%	3-5%	Use with care to avoid hazards to fish and wildlife. Use malathion as a residual spray in dwellings for spot treatment only.
Methoxychlor	--	--	0.2 lb.	--	3%	5%	
Naled	--	--	0.1-0.25 lb.	--	1%	--	
Paris green	G, 0.6-1.5 lb.	--	--	--	--	--	
Chlordane	EC, WP, or soln., 0.2-0.4 lb.	--	0.2-0.4 lb.	--	--	2%	Do not treat areas where food or feed crops are grown; do not use on range or pasture.
DDT	EC, WP, or soln., 0.05-0.4 lb.	EC or WP, 1-3 lb.	0.2 lb.	WP, 1-3 lb.	3-5%	5%	Do not contaminate food or feed crops. Use with care where fish and wildlife may be endangered; dieldrin and heptachlor are particularly hazardous to wildlife. Use residual sprays in dwellings for spot treatment only (except DDT or ronnel).
Dichlorvos**	--	--	0.05-0.1 lb.	--	0.5%	0.5%	
Dieldrin	EC or soln., 0.05-0.1 lb.	EC or G, 1 lb.	--	WP, 0.5-1 lb.	--	0.5%	
Heptachlor	EC or soln., 0.1 lb., or G, 0.05-0.1 lb.	--	0.1 lb.	--	--	0.5%	
Lindane	EC, WP, or soln., 0.1-0.15 lb.	--	0.1-0.2 lb.	WP, 0.5-2 lb.	--	0.5%	
Ronnel	--	--	--	1%	1%	1%	
EPN	WP, 0.0375-0.075 lb.	--	--	--	--	--	Any application of EPN, fenthion, or parathion should be made by trained operators only. To avoid excessive residues where cattle graze, larvicide only the water areas. Keep cattle off treated vegetation for 4 or more days (parathion - 1 day) after treatment with larvicide, space spray, or fog. Use all the insecticides with care where fish and wildlife may be endangered. Use fenthion as a residual spray in dwellings for spot treatment only.
Fenthion	EC, WP, or soln., 0.05 lb., or G, 0.05-0.1 lb.	--	0.1 lb.	WP, 1-3 lb.	--	3%	
Parathion	EC or soln., 0.063-0.1 lb.	--	--	--	--	--	

1/ Apply on nonagricultural lands only. Prehatch may be especially hazardous to fish and wildlife.

2/ EC or oil solution. Pyrethrins, malathion, and naled may be used to control adult mosquitoes on pastures, forage areas, and rangelands.

3/ Apply on nonagricultural vegetation only. May be hazardous to fish and wildlife.

4/ Piperonyl butoxide or sulfoxide.

* Other insecticides, such as aldrin, TDE, toxaphene, Thanite, and Lethane 384, have certain uses in mosquito control. If such products are used, follow manufacturer's directions on the label.

** Available also in a resin strip for use indoors and in sewer catch basins.

HOUSEHOLD INSECTS

Precautions: In applying any insecticide in the household, observe all precautions specified in this handbook.
Use only products specifically labeled for use in homes. Follow the directions and heed the precautions on the container label.

INSECTS	INSECTICIDE	STRENGTH		WHERE AND HOW TO APPLY	REMARKS AND PRECAUTIONS
		SPRAY *	DUST **		
Ants	Chlordane	2-3%	5% or 6%	Paint or spray baseboards and cracks. Dust behind baseboards and in out-of-sight areas.	Use on limited areas only. Do not treat entire walls or floor. Do not contaminate food, water, dishes, or utensils with insecticides. Do not allow children or pets near treated surfaces until spray has dried.
	Diazinon	0.5%	--		
	Dichlorvos	0.5%	--		
	Dieldrin	0.5%	1%		
	Heptachlor	0.5%	--		
	Lindane	0.5%	1%		
	Malathion	2-3%	4% or 5%		
	Kepone	--	(0.125% B)	Place in nest openings, around foundations and in other areas frequented by ants.	Do not use in places where the insecticide might be accessible to children or pets.
Bed bugs ***	DDT	5%	--	To slats, springs, and frames of bed. Spray mattress lightly. Paint or spray baseboards and wall cracks.	Allow mattress to dry before use. A higher concentration of lindane (0.5%) may be used on slats, springs, and frames of bed.
	Lindane	0.1%	--		
	Malathion	1%	--		
	Ronnel	1%	--		
	Dichlorvos	0.5%	--	Tufts and seams only, on mattress. Also to slats, springs, and frames of bed.	Dry at least 4 hours before use.
Cockroaches***	Chlordane	2-3%	5% or 6%	Paint or spray baseboards, cabinets, and other places where cockroaches hide. Dust behind baseboards and in out-of-sight areas. Treat places where pipes go through walls or floors.	Use on limited areas only. Do not treat entire walls or floor. If food and dish shelves are treated, allow to dry, and cover them with shelf paper before replacing articles. Do not contaminate food, water, dishes, or utensils with insecticides. Do not allow children or pets near treated surfaces until spray has dried.
	Diazinon	0.5%	--		
	Dichlorvos	0.5%	--		
	Dieldrin	0.5%	1%		
	Heptachlor	0.5%	--		
	Lindane	0.5%	1%		
	Malathion	2-3%	4% or 5%		
	Ronnel	2%	--		
	Kepone	--	(0.125% B)	Place in areas frequented by cockroaches.	Do not use in places where the insecticide might be accessible to children or pets.

*Some formulations may be purchased ready to use; others must be prepared by diluting emulsifiable concentrates or wettable powders.

** May be purchased ready to use.

*** May be resistant to one or more of the following insecticides: DDT, chlordane, dieldrin, or lindane.

HOUSEHOLD INSECTS (continued)

INSECTS	INSECTICIDE	STRENGTH		WHERE AND HOW TO APPLY	REMARKS AND PRECAUTIONS
		SPRAY*	DUST **		
Fleas ***	DDT	5%	5% or 10%	Apply to floor and baseboards and to walls to a height of 1 foot; dust rugs thoroughly; spray rugs and furniture lightly.	Supplement by treating dogs or cats with a product labeled for such use. Do not apply DDT to cats or puppies.
	Malathion	2%	4% or 5%		
	Methoxychlor	5%	10%		
House flies	Malathion	2%	4% or 5%	Apply around windows and to other surfaces frequented by flies.	Do not contaminate food, water, dishes, or utensils.
	Naled	1%	--		
	Ronnel	1-2%	--		
	Dichlorvos ****	0.5%	--	Spray into the air when flies are present. Available in aerosol bombs. Use only sprays or aerosols labeled for flying insects. Apply according to directions on container label.	Some products also contain Lethane 384, Thanite, DDT, methoxychlor, or lindane.
	Malathion	2-4%	--		
	Pyrethrins + piperonyl butoxide	1-2%	--		
	Ronnel	0.5%	--		
Mosquitoes	See page 192 for control measures.				
Silverfish and firebrats	Chlordane	2-3%	5% or 6%	Paint or spray baseboards, door and window casings, closets, and places where pipes go through walls or floors. Dust behind baseboards and in out-of-sight areas.	Use on limited areas only (except DDT, ronnel, or malathion dust or 2% spray). Do not treat entire walls or floor. Do not contaminate food, water, dishes, or utensils. Do not allow children or pets near treated surfaces until spray has dried.
	DDT	5%	5% or 10%		
	Diazinon	0.5%	--		
	Dichlorvos	0.5%	--		
	Dieldrin	0.5%	1%		
	Heptachlor	0.5%	--		
	Lindane	0.5%	1%		
	Malathion	2-3%	4% or 5%		
	Ronnel (Korlan)	1%	--		

* Some formulations may be purchased ready to use; others must be prepared by diluting emulsifiable concentrates or wettable powders.

** May be purchased ready to use.

*** May be resistant to DDT or methoxychlor.

**** Available also in a resin strip.

HOUSEHOLD INSECTS (continued)

INSECTS	INSECTICIDE	STRENGTH		WHERE AND HOW TO APPLY	REMARKS AND PRECAUTIONS
		SPRAY *	DUST **		
Spiders	Chlordane	2-3%	5% or 6%	Spray or dust webs and corners frequented by spiders.	Do not contaminate food, water, dishes, or utensils.
	Dichlorvos	0.5%	--		
	Dieldrin	0.5%	1%		
	Malathion	2-3%	4% or 5%		
	Ronnel (Korlan)	1%	--		
Ticks, including brown dog tick ***	Chlordane	2-3%	5% or 6%	Spray, paint, or dust baseboards, door and window casings, edges of carpets, behind pictures and draperies, and all other possible hiding places.	Use on limited areas only (except DDT, or malathion dust or 2% spray). Do not treat entire walls or floor. Do not contaminate food, water, dishes, or utensils. Do not allow children or pets in treated areas until surfaces are dry. Supplement by treating dogs with a product labeled for such use.
	DDT	5%	--		
	Diazinon	0.5%	--		
	Dichlorvos	0.5%	--		
	Dieldrin	0.5%	1%		
	Lindane	0.5%	--		
	Malathion	2-3%	4% or 5%		
Wasps	DDT	5%	10%	Spray or dust nest, concentrating on nest openings.	Treat nests after dark, without lights, if possible. Use dusts or water-base sprays to avoid damaging vegetation. After treatment of underground nests, cover openings with moist dirt.
	Chlordane	2-3%	5% or 6%	Spray or dust nest, concentrating on nest openings, around windows and areas frequented by wasps.	
		Dieldrin	0.5%		
	Dichlorvos	0.5%	--	Spray nest directly.	
	Heptachlor	0.5%	--		

* Some formulations may be purchased ready to use; others must be prepared by diluting emulsifiable concentrates or wettable powders.

** May be purchased ready to use.

*** Brown dog tick may be resistant to one or more of the following insecticides: DDT, chlordane, dieldrin, or lindane.

PUBLICATIONS
U. S. Department of Agriculture

Leaflets

- 161. The Eastern Tent Caterpillar. (1964)
- 199. Gardenia Culture. (1963)
- 274. Control of Apple Tree Borers. (1961)
- 309. Preventing Greenbug Outbreaks. (1951)
- 325. Control of the Alfalfa Caterpillar. (1963)
- 338. Stable Flies--How to Control Them. (1953)
- 340. The Periodical Cicada. (1960)
- 348. The Velvetbean Caterpillar--How to Control It. (1959)
- 364. Chinch Bugs--How to Control Them. (1958)
- 365. Wasps--How to Control Them. (1963)
- 367. The Tomato Fruitworm--How to Control It. (1963)
- 370. The Seed-Corn Maggot on Beans--How to Control It. (1962)
- 382. The Fowl Tick--How to Control It. (1962)
- 383. Poultry Mites--How to Control Them. (1962)
- 387. Wood Ticks--How to Control Them in Infested Places. (1963)
- 388. Horn Flies on Cattle--How to Control Them. (1963)
- 389. Cantaloup Insects in the Southwest--How to Control Them. (1964)
- 390. The House Fly--How to Control It. (1963)
- 392. Fleas--How to Control Them. (1964)
- 401. The White-Fringed Beetle--How to Control It. (1962)
- 403. Chiggers--How to Fight Them. (1963)
- 411. The Corn Earworm in Sweet Corn--How to Control It. (1961)
- 412. Silverfish and Firebrats--How to Control Them. (1961)
- 422. The Spotted Alfalfa Aphid--How to Control It. (1959)
- 430. Cockroaches--How to Control Them. (1964)
- 431. The Sweetpotato Weevil--How to Control It. (1960)

Leaflets (con.)

- 444. The Narcissus Bulb Fly--How to Prevent Its Damage in Home Gardens. (1963)
- 449. Okra Culture. (1962)
- 453. How to Control Bed Bugs. (1959)
- 455. The Pickleworm--How to Control It. (1964)
- 456. Cattle Lice--How to Control Them. (1960)
- 461. Bluetongue of Sheep. (1960)
- 462. The Bollworm--How to Control It. (1960)
- 467. The Cotton Aphid--How to Control It. (1960)
- 468. The Cotton Leafworm--How to Control It. (1960)
- 474. Chicken Lice--How to Control Them. (1960)
- 475. The Cotton Fleahopper--How to Control It. (1960)
- 479. The Sugarcane Borer--How to Control It. (1960)
- 494. The Armyworm and the Fall Armyworm--How to Control Them. (1961)
- 500. Milky Disease for Control of Japanese Beetle Grubs. (1961)
- 502. Spider Mites on Cotton--How to Control Them. (1962)
- 503. Lygus Bugs on Cotton--How to Control Them. (1962)
- 504. Controlling Green June Beetle Larvae in Tobacco Plant Beds. (1962)
- 514. The Meadow Spittlebug--How to Control It on Legumes. (1962)
- 516. Thrips on Cotton--How to Control Them. (1962)
- 520. Controlling the Sugarcane Beetle on Corn in the Southern States. (1963)
- 521. The Potato Leafhopper--How to Control It. (1963)
- 525. Growing Black Walnuts for Home Use. (1963)
- 527. How to Control Cattle Grubs. (1964)
- 529. The Pea Aphid on Alfalfa--How to Control It. (1964)
- 534. The Southern Potato Wireworm--How to Control It on Irish Potatoes. (1965)

PUBLICATIONS (continued)
U. S. Department of Agriculture

Farmers' Bulletins

- 1330. Parasites and Parasitic Diseases of Sheep. (1961)
- 1566. The Sorghum Midge--With Suggestions for Control. (1959)
- 1624. The Mexican Bean Beetle in the East and Its Control. (1960)
- 1646. Asparagus Culture. (1963)
- 1651. The Corn Earworm as an Enemy of Field Corn in the Eastern States. (1953)
- 1668. The Red Harvester Ant and How to Subdue It. (1953)
- 1798. Control of Common White Grubs in Cereal and Forage Crops. (1961)
- 1893. Control of Grape Diseases and Insects in the Eastern United States. (1961)
- 2045. Commercial Production of Tomatoes. (1963)
- 2081. Mormon Crickets--How to Control Them. (1962)
- 2086. Growing Pumpkins and Squashes. (1964)
- 2099. Control of Caterpillars on Commercial Cabbage and Other Cole Crops in the South. (1964)
- 2147. The Boll Weevil--How to Control It. (1962)
- 2148. Aphids on Leafy Vegetables--How to Control Them. (1960)
- 2151. The Japanese Beetle--How to Control It. (1963)
- 2184. Strawberry Insects--How to Control Them. (1965)
- 2185. Growing Cherries East of the Rocky Mountains. (1962)
- 2189. Controlling Drosophila Flies on Tomatoes Grown for Canning. (1962)
- 2190. The European Corn Borer--How to Control It. (1962)
- 2193. Grasshopper Control. (1964)
- 2205. Growing Peaches East of the Rocky Mountains. (1964)
- 2207. Controlling the Pink Bollworm on Cotton. (1965)

Home and Garden Bulletins

- 25. Roses for the Home. (1964)
- 28. Ants in the Home and Garden--How to Control Them. (1963)
- 44. Cabbage Insects--How to Control Them in the Home Garden. (1963)
- 46. Insects and Diseases of Vegetables in the Home Garden. (1963)
- 53. Lawn Insects--How to Control Them. (1964)
- 66. Growing Iris in the Home Garden. (1964)
- 67. Insects and Related Pests of House Plants--How to Control Them. (1964)
- 75. The European Earwig--How to Control It Around the Home. (1964)
- 84. Controlling Mosquitoes in Your Home and on Your Premises. (1962)
- 86. Growing Camellias. (1962)
- 96. Controlling Household Pests. (1964)

Agriculture Handbooks

- 142. Control of Insect Pests of Greenhouse Vegetables. (1959)
- 173. A Handbook of the Mosquitoes of the Southeastern United States. (1960)
- 221. Lettuce and Its Production. (1962)
- 236. The Japanese Beetle in the United States. (1963)
- 240. Controlling Insects and Diseases of the Pecan. (1963)
- 264. Potato Insects--Their Biology and Biological and Cultural Control. (1964)

PUBLICATIONS (continued)
U. S. Department of Agriculture

Agriculture Information Bulletins

- 237. Controlling Insects on Flowers. (1963)
- 259. Commercial Watermelon Growing. (1962)
- 272. Insect Pests of the Peach. (1963)
- 276. Pepper Production. (1964)
- 287. Grasshoppers--Their Habits and Damage. (1964)

Technical Bulletin

- 1221. Biology and Control of the Rhodesgrass Scale. (1960)

Program Aids

- PA-301. The Mediterranean Fruit Fly - Methods of Eradication. (1956)
- PA-368. The Fight Against the Imported Fire Ant. (1962)
- PA-455. The European Chafer--How We Fight It. (1961)
- PA-550. Watch for the Cereal Leaf Beetle. (1964)

E and ARS Series

- E-813. EQ 335 and Other Wound Treatments for Screw-worm Control. (1951)
- ARS-33-3. Fruit Fly Control with Poisoned-Bait Sprays in Hawaii. (1958)
- ARS-33-45. Suggestions for Fly Control in Poultry Establishments. (1958)

Eighteenth Annual Conference Report on Cotton Insect Research and Control, 1965, Entomology Research Division, in cooperation with 15 cotton-growing States.

Circular

- 632. Rice-Field Insects. (1957)

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